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ABSTRACT

The conference recorded in this document covered a wide variety of themes and consisted of keynote addresses, research presentations, and workshops. The following workshop presentations are included: "Vocational Education in a Developing Country" (Theron); "From the Technical to the Critical: A New Agenda for Vocational Education Research" (McIntyre, Jennings); "Policy Constraints to the Growth of Technology Education Programs: Implications for Technology Development in Nigeria" (Eze); "Economic Growth, Investment in Technology, and the Context of New Zealand Vocational Education Policies" (Stevens); "Philippine Social and Economic Imperatives for Vocational Education" (Elevazo); "Almost Invisible: Isolated Rural Women's Access to Tertiary Education" (Mageean); "Women Technicians' Self-Concept, Problems, and Training Needs" (Espino); "Reflective Learning at ITATE" (Scott); "Reflection and Education of TAFE Teachers" (Knights); "Vocational, Science, Technological, and Engineering-Technology Education" (Waks); "Vocational Education/General Education: A False Dichotomy?" (Hager); "Recent Research and Development in Vocational Education" (Ball); "ICI/TAFE Cross Trade Training of Electrical and Instrument Tradespersons" (Devlin); "What Do Unions Want from TAFE?" (Laurent); "Theory Backgrounds and Research Evaluation of an Innovative Program of Professional Staff Development in the Interface between Education and Economy" (Elsey); "Relation between Education and Industry through Teaching Geography and English Language" (Casterlieva); "Participant-Directed Learning at ITATE: Theory and Practice" (Foley); "Negotiating Programs" (Cohen); "Using Games and Simulations to Structure Experiential Learning" (Leigh); "Communication Modules for Vocational Teachers: Encouraging Reflection on Communication Practice" (Saunders); "Providing for Students from Non-English-Speaking Background in Vocational Education" (Brown); "The Technician Workforce--Sector Changes as an Economy Restructures: Implications for Training" (Whisker); "Using a Journal in Developing Teaching Skills: An Evaluation" (Gonczi); "Block Training for New South Wales TAFE Teacher: An Evaluation over Three Years" (Watson); "The Learning Contract Method as a Means of Developing Self-Directed Learners: Evaluation, Study, and Implications for the Development of Adult Educators" (Bennett, Field); "The Organization and Development of a Relevant Research Program: The ITATE Experience to 1988 and Beyond" (Schaafsma); "Critical Thinking as a Prerequisite for Reflective Teaching" (Hager); "Future Directions on Research in Vocational Teacher Education" (Kaye); and "Sticks and Carrots: A Managed Change of Traditional Approaches to Training" (Burleigh). (CML)

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Monday March 13. 3.30 pm; Thursday March 16. 11.00 am.

Adelaide Room 3

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Mr. John McIntyre, Dr. Leonie Jennings. Lecturers in Technical Teacher Education, Institute of Technical and Adult Teacher Education, Sydney College of Advanced Education. *From the Technical to the Critical: A new agenda for vocational education research.*

Dr. Titus I. Eze. Technology Education Department, Federal University of Technology, Gongola State, Nigeria. *Policy Constraints to the Growth of Technology Education Programs: Implications for technology development in Nigeria.*

Mr. K.J. Stevens. Department of Education, Victoria University of Wellington, New Zealand. *Economic Growth. Investment in Technology and the Context of New Zealand Vocational Education Policies.*

Dr. Aurelio O. Elevazo. Assistant Secretary for International Education. Department of Education, Culture and Sports. Philippines. *Philippine Social and Economic Imperatives for Vocational Education.*

PAPER FOR THE

TAFE

INTERNATIONAL CONFERENCE

12 - 19 MARCH 1989

NATIONAL CENTRE FOR RESEARCH AND DEVELOPMENT
ADELAIDE, SOUTH AUSTRALIA

VOCATIONAL EDUCATION IN A DEVELOPING COUNTRY

BY

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VOCATIONAL EDUCATION IN A DEVELOPING COUNTRY

Prof. P.F. Theron

INTRODUCTION

Vocational education can be described as that part of education which prepares a person for a productive career in a particular field, and also for life in general. Vocational education covers a large number of careers varying from the training of secretaries, nurses and teachers to the wide field of technical vocational education for industry and agriculture. Vocational education is therefore responsible for providing skilled manpower for an economy, as well as for the development of manpower in careers. Thus vocational education provides the logical conclusion to the whole educational process.

DIFFERENCE BETWEEN VOCATIONAL EDUCATION AND VOCATIONAL TRAINING

Vocational training is a much more limited concept which refers to the acquisition of certain skills which are required to enable a person to handle a well-defined work situation. Vocational education refers to a combination of generally formative education and vocational training and usually forms a basis for continued education.

SPECIALISATION AND DIFFERENTIATION

As it takes time before the aptitudes and interests of children are manifested during their school years, it is necessary that vocational education be preceeded by general preparatory education which should develop the necessary general skills and values required by most children. The general preparatory phase of education should also reveal and develop special aptitudes, interests and skills in pupils, thereby preparing them for meaningful differentiation in various fields of education.

EDUCATION IN SOUTH AFRICA

South Africa is a developing country with a low average population density (approximately 22 people per square mile), rich natural resources, a reasonably well-developed infrastructure and modern indrustrial and mining sectors. Modern and traditional agriculture, however, exist side by side in underdeveloped rural areas. The underdeveloped areas are characterised by a low agricultural productivity, a relatively high population density and a rapidly growing population which exceeds the underutilised agricultural resources. Pracitcally speaking, all communities and areas are directly or indirectly linked to the modern sector of the economy, whether by migrant labour, agricultural workers, distribution of economic capital or the replacement of products produced by traditional technologies by products of the modern sector and the formal educational system. This trend leads to increased expectations in all people and a strong awareness of the relative want of those on the periphery of the modern sector. This is, for example, the driving force behind the tendency towards rapid urbanisation and congestion around industrially developed areas.

PROBLEMS REGARDING VARIOUS CAREERS IN SOUTH AFRICA

South Africa is in inclined to depend on industrial development in imitation of the Western world, which tends to cause capital-intensive mechanisation and automatised industrialisation as a result of a shortage of manpower, high wages and a large market brought about by abundance and conspicuous consumption. This means that South Africa (or rather a developing country) has to make tremendous provision for vocational education for its population. This approach gives rise to various problems in the South African society.

1. Each new work opportunity that is created not only requires thorough training of a specific person or persons, but also a high average capital investment (reported to be between R15 000 and R35 000 per work opportunity). At present it is necessary to create approximately one thousand new work opportunities per working day in the "modern" sector in order to combat unemployment in the traditional sector.
2. The present shortage of skilled manpower prevents the modern sector from functioning at full capacity. This leads to an increase in salaries and production costs.
3. Because of high wages and the scarcity of skilled manpower, it is difficult to lower production costs to such an extent that world markets can be penetrated effectively.

SOLUTIONS FOR A DEVELOPING SOCIETY

If a developing country structures its vocational education in such a way that it meets the needs described above, solutions can easily be found for these problems. In spite of cultural and racial tensions, South Africa is intrinsically in a much better position to develop than most other developing countries, as it has a positive economic growth rate, rich natural and human resources, and a viable infrastructure. Considerable formal and informal interaction takes place between different racial groups, a free market system is being developed and in the economy racial discrimination is disappearing. More viable political solutions are being searched for in the constitutional dispensation of South Africa.

Under these circumstances education will play a decisive role, because the entire development objective can only be achieved by equipping persons through education and training with appropriate skills, value systems and a common goal. Education should therefore have a big influence on the modern as well as the more traditional sectors if the existing situations and values are taken as point of departure and the community of objective and values is kept in mind, whilst different approaches in respect of these goals are encouraged.

VOCATIONAL TRAINING AND UNIVERSITY EDUCATION

In a developing country the question of what the relationship between vocational training and university education should be is often asked. It is also often asked whether vocational education should take place at a university and whether vocational training should not rather take place at a technikon or technical college.

At a university a student can be prepared for a career, but not trained or coached. The education at a university must remain primarily academic; it must equip the student with only the theoretical basis of a profession on academic and intellectual level. The university must not be a vocational school like a technikon; practical training is out of place at a university - these are some of the arguments or facts often heard in this regard.

The advocates of vocational training at universities often refer to the training of legal practitioners, engineers, doctors, pharmacists and chartered accountants who are prepared for highly skilled careers.

This training is undergone at the university and professional councils and bodies have a say in the tuition given to these students. These councils require that the tuition be career-orientated and practical so that the graduate can immediately function fully and make a useful contribution when he enters into the profession. It is therefore often asked how this differs from full vocational training.

RELEVANCE OF TRAINING

Because South Africa is a developing country which also faces an unemployment problem, the demand for vocational training at the university is becoming bigger and bigger, as does the demand that vocational training, especially for specific technical career-orientated fields, should not take place at the university. Most students entering a university today have a particular career in mind. A distinct decrease in the number of students who register for the non-career-orientated degrees can be discerned. Students no longer go to university for the generally formative value of university study. These students demand relevant education and want every subject to have a definite bearing on their eventual careers. The International Labour Office found a number of years ago that in many countries the best paid jobs went to those with the so-called "know-how" - people with career-orientated training. Consequently many countries have a surplus of unemployed graduates - a situation which is also arising in south Africa now.

The demand for relevance is also heard from the private sector. Recently leading bankers said that new graduates in the financial sector are often unable to do much more than talk and theorise generally around their field of study. In this respect the "general" degrees especially come under attack. The Institute for Manpower Research of the Human Sciences Research Council recently found that degrees with general fields of study such as B.A., B.Com. and B.Sc. do not prepare the sutdent for a particular career. The major subjects the student takes, and the combination of subjects have an important influence on his professional career.

In a developing country it is essential that the university should provide relevant training. More courses should be designed that are directed towards a particular career and also require scientific reflection. Theoretical reflection need not necessarily be impractical.

University education in South Africa can therefore be much more career and practice-orientated than is the case at present. The theoretic-fundamental-scientific prerequisites of university study can be reconciled with the requirements of career-orientation. The university, in competition with technical colleges and technikons for example, especially in drawing students, therefore faces the economic reality of giving the student what he wants, namely full vocational training in all subjects and fields of study that lend themselves to it. On the other hand there is an increasingly strong urge in a developing country to give less theoretical education, for example degree education to students, but more practical career-orientated education, which will be discussed later.

THE ROLE AND TASKS OF TECHNIKONS IN SOUTH AFRICAN EDUCATION

INTRODUCTION

It is common knowledge that South Africa is experiencing in acute shortage of skilled manpower, especially in the technological vocations. The well-known mining magnate, Mr Harry Openheimer, said in this regard that: "There must be few people who do not agree that the shortage of skilled manpower, especially in the technological fields, is one of the most acute facing South Africa today. Indeed, I would say it was the most acute problem."

Research has shown that the white labour potential is near saturation, while the huge labour potential of the black population is largely untapped. A new serious cause for alarm is the fact that approximately a million blacks should enter the managerial group by the end of this century. This figure represents about 8,42 % of the expected economically active black population in the year 2000. It should be quite clear at what rate blacks should be educated in this connection.

This situation is unfortunately not much different in the various technological fields. During the 1980's there was a shortage of approximately 5 000 engineering technicians, whereas only 110 of the 870 engineering technician diplomas awarded during 1982-83 were presented to black students. These statistics should indicate very clearly that technikons, as the most important tertiary educational institutions offering technical and vocational education, have a vital role to play in the education and training of technicians in general, and black technicians in particular. In comparison to the universities it is of the utmost importance that technikons should play a definite part in the education needed for the year 2000.

It should be noted that technikons are not in competition with universities, but that they are developing parallel to universities.

To indicate the technical and vocational nature of technikon courses, it is only necessary to mention the different academic departments. They are, inter alia, building sciences, chemical and physical sciences, mechanical, electrical, electronic, civil and chemical engineering, medical and health sciences, secretarial training, management and communication. They specialise in diploma courses, and devertical structure of qualifications was accepted during the 1980's.

THE NATURE OF VOCATIONAL EDUCATION IN A DEVELOPING COUNTRY

The technical vocational training and for that reason the technikons, should play a more important role in the provision of manpower in a developing country. To fulfil this need, courses at technikons are adapted continuously to produce qualified technicians who will be familiar with the practical work situation from the very start. For this reason, co-operative educational courses, especially in the technological field, are very popular at technikons. Co-operation exists between the technikon and the employing organisation as they have a common aim, namely to provide industry, commerce and society with technologically skilled manpower.

To achieve the above-mentioned aim, technikons have adapted a unique didactical model, known as the 'hands on' approach or the 'integrated didactical model'.

According to this model, practical work is increasingly integrated with the theory in order to achieve not only knowledge, but to apply that knowledge meaningfully in a practical situation. The emphasis is therefore on dexterity instead of abstract facts and on practice instead of theory.

nurturing a more positive approach in their pupils with regard to technical and vocational training.

PROVIDING TECHNICIANS AND TECHNOLOGISTS

Although it remains the most important aim for all population groups to receive professional education at a university it is of the utmost importance in a developing country that provision be made for technicians and technologists. In a developing country technicians and technologists are essential and therefore technical colleges and technikons are necessary to fulfil this need, especially as the public's perception and value systems, especially about labour, change. Universities in South Africa cannot fulfil the need for technicians and especially engineers alone. If one looks at the students who register for engineering courses and who complete the courses, it is interesting to note that it takes an average of 5,3 years to complete a 4-year course at a university. Approximately 900 to 1 000 white engineers complete their courses per year, thereas the other population groups produce only a few engineers. As a result there is a general shortage of engineers which hampers development in this field. It is therefore essential that other ways and means be found to prepare technically skilled persons, especially for the labour market and the sophisticated careers.

Considerable attention has been paid to the upgrading of status and increase in the number of technikons during the last few years in order to improve technical vocational education after Std. 10. The technikons concentrate on sandwich courses when training technicians: a semester at work followed by a semester at the technikon. In this way new and higher qualifications, up to T6, are being developed at technikons for training technologists - a very important field for a developing country.

In a developing country skilled workers (artisans) are trained by means of apprenticeship. Std. 7 or a higher standard serves as admission requirement, depending on the trade. Apprentices can write a trade test after two and a half years if they have already passed trade theory at N2-level. If they pass the trade test they are regarded as fully qualified and skilled workers.

As a result of the shortage of skilled workers, the rapid technological development and the large-scale elimination of apprentices in the traditional system, however, this type of training is falling into discredit to an increasing extent. In many areas institute training of apprentices is replacing the traditional system fully or partially. Modern training methods such as "criterium reference instructions" are used and the results are satisfactory. The biggest restricting factor, however, is that the total training cost of a skilled worker amounts to R15 000 and R20 000, of which very little can be compensated for by useful production during training. This cost is similar to that of a three-year degree course. The high cost impedes the training of large numbers of skilled workers by this system.

In a developing country the rate of training, not only of engineers but also of several other technologically trained persons, is too low. However, there is general consensus in industry that the largest shortage is on the level of skilled workers and technicians, and that that represents the greatest inhibiting factor. To solve the continuous shortage of skilled manpower it became customary to divide the work undertaken by skilled workers into smaller units and to have it done by semi-skilled workers. A reasonable amount of success has been attained by industry and especially the mining industry with non-formal technical training in this field. In many areas this could result in an effective ratio of one skilled worker to 6 semi-skilled workers. This rapid multiplication rate can however not be applied effectively for the provision of new job opportunities as a result of a shortage of skilled manpower.

Because South Africa represents a very complex blending of first world and third world economies, it is very difficult to find comparable countries. A comparison between Israel and Taiwan is illuminating as far as training rate is concerned, as both of them started to develop in 1948.

If compared with Israel and Taiwan it can be concluded that South Africa's training rate for its whole population falls short with a factor of between 8 and 10. This disproportion indicates a fundamental problem in the South African educational system - which in the past was used as a blueprint for the various educational systems of other population groups in the country. The problem becomes more evident if one bears in mind that despite the great increase in the provision of education the system does not succeed in providing the skilled manpower required for development, and even fails to yield the necessary trained teachers.

NEEDS REGARDING MODERN SCIENCE, TECHNOLOGY AND MANAGEMENT IN A DEVELOPING COUNTRY

It cannot be denied that modern science, technology and management are the only and most powerful instruments by means of which man can transform his environment as he pleases. The fact that in most developing countries these instruments have not yet been mastered or have not been taken up into the various cultures, is one of the basic problems of development. It is therefore essential that science and technology be introduced into traditional cultures as soon as possible. For this purpose proficiency in science should firstly be developed, as this should lead to proficiency in technology and eventually to development. Secondly strong modern adacemic education should be introduced for the developing countries with the emphasis on the sciences.

Where the above-mentioned method was followed, the results generally were disappointing. Only a few of the cleverest pupils really mastered science. Those who were successful, attained an academic system or values which attaches greater importance to fundamental research than to technical application. The majority of the children were unable to cope with academic science and consequently could not remain in the scientific-technological stream. Certain pupils managed to pass their examinations in science and mathematics by using methods which can be regarded as parrot work. Many of them became science teachers, thus creating a vicious circle of learning in parrot fashion.

It is, however, difficult to explain why it cannot work for children in a development situation. A child growing up in an environment with little contact with modern science as well as poor insight into the way modern technology works, can by means of informal education acquire a system of values and concepts that differ totally from those of children exposed to science and modern technology, as for instance in the Western world.

A child coming from a traditional rural type of culture or from a culture with strong remains of traditional values, does not have sufficient background of concrete experiences to develop concepts which are necessary for the development of science and mathematics and higher technology ("hightech").

It is therefore unlikely that the general call for more and better science education, which is related to technology and life itself, will improve control over science and technology in developing countries drastically. In my opinion the only solution in this respect is an improved technical vocational training of a large proportion of the population to serve the higher technological occupations and the higher technological requirements of our time.

A SOLUTION FOR THE PROBLEM OF A TECHNOLOGY IN A DEVELOPMENT SITUATION

A child or adult first masters simple technology in a field where natural aptitude and interest apply. These experiences are then connected to the underlying science insight. This is then followed by experiences with sophisticated technology and deeper insight into and study of the underlying sciences, etc. This is largely supported by educational theories, e.g. the so-called experience-based approaches dating back to the classics and pursued by people like Pestalozzi, Dewey and others. It is also reconcilable with more modern educationists of the German School represented by for example Klafki.

IMPLEMENTATION

The introduction of vocational education as a chief component in the formal school system, with the application of the above-mentioned teaching model, is of vital importance. The result may be that the technology in question (technologies in the broadest possible context) may be mastered and may produce an able person who can make a contribution to development. The sciences underlying the specific technology are also mastered in such a way that further effective non-formal continuous education becomes possible along a career ladder. In this way the underlying principles of modern technology can be mastered and lead to the introduction of a new deucation culture in the developing communities concerned. This idea is confirmed by the effectivity of education systems in countries like

Israel and Taiwan where approximately 70 % of all pupils at senior secondary level receive vocational education.

RECOMMENDATIONS FOR DEVELOPING COUNTRIES

In most developing countries the educative value of career education has up to now been undervalued, which has contributed to the stigma of being inferior education for labourers. It is in the best interests of the country but also in the interest of the individual that career education at school should provide for a heterogeneous population. An important first step would be the clear formulation of the aims of career education and spelling out its educative value, especially in order to remove the objections of the black community.

Although great progress was made with the introduction of career education at secondary and tertiary level in the black communities in South Africa, there are deep-rooted doubts about the aims with career education as far as the black community is concerned. An investigation into the education system in the Republic of Venda airs the following doubts: "Some commentators on the De Lange report's enthusiasm for career education has seen in career education a subtle means of streamlining apartheid in education." Black people fear that the HSRC report on the provision of education in South Africa (the De Lange report) simply provides a model for using trained black people to fill the gaps in the white economy.

Fears which exist in the minds of black people should be brought into consideration, especially in the training programmes for career teachers, as the career teacher is the link between the world of work and education. It is therefore of the utmost importance that the training courses, especially for black career teachers, should not only be tuned in to the coaching of trade or technical skills, but on the real benefits of modern technology as a means by which the services of the country as a whole as well as the standard of living of the individual may be improved.

FOREIGN EXPERIENCE

In the light of foreign experience it is recommended that the following strategies be seriously considered to ensure the successful implementation of formative preparatory, career-orientated education in South Africa.

1. Initially a few excellently equipped career schools should be established at strategic places instead of having numerous poorly equipped career schools at various points.

2. The training of teachers in career-orientated courses should be such that the teaching courses are held in high regard by students and the community from the outset.

3. It should be determined in what way the private sector can be involved meaningfully in career-orientated education without affecting the control of the authorities over education, but by establishing a sound partnership between the authorities and the private sector.

4. Experience in West European countries and Israel has taught us that the successful implementation of career-orientated education depends, to a great extent, on the support which teachers receive in the technological field in schools. It is essential that experts from commerce, industry and the business world be readily available to give assistance and adivce. Especially among developing communities and more sparsely populated areas it was found that regular visits by an adviser (expert) with a mobile laboratory can be of vital importance.

5. It is also essential that sufficient sponsors be found in the private sector, in commerce, industry and mining, to meet the needs of career education at its various levels and in its different fields of the community.

FROM THE TECHNICAL TO THE CRITICAL: A NEW AGENDA FOR VOCATIONAL EDUCATION RESEARCH.

by
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AN AGENDA FOR RESEARCH

Our understanding of a research agenda in vocational education is based on a number of interlocking propositions, suggesting that research in vocational education needs to:

- Investigate the effect of different forms of the curriculum on teachers.
- Relate teacher understandings to formal educational structures which may be viewed as institutions in crisis.
- Identify problems of institutional members in adapting to a rapidly changing context.
- Involve teachers as action researchers thus empowering them to address problems in their practice.

This research agenda therefore raises issues about what problems need to be researched and whose problems they are. The agenda is based on the strong conceptual frameworks of interpretive sociology (e.g Garfinkel, 1967; Cicourel, 1974) and a sociology of educational knowledge (Young, 1971; Bernstein, 1977) but within a critical theory framework that identifies teachers' practices as being central and problematic (Carr and Kemmis, 1983).

In the paper which follows each of these agenda items will be discussed in turn after establishing the theoretical research framework.

THE RESEARCH FRAMEWORK.

All researchers need to select a paradigm within which they can operate. Until the mid 1960's, educational research and evaluation were influenced primarily by the rationalist, positivist tradition. In the mid 1960's and early 1970's, this traditional view was challenged at both a practical and theoretical level. There was an emphasis on the search for universal laws in education, using the hypothetico-deductive method of enquiry which depended on representative sampling and controlled experiment as a basis for theory building. Kuhn (1962) called for a paradigm shift, especially in the social sciences and Berger and Luckmann (1967) emphasized the importance of "multiple perspectives" in their pivotal study of the "Social Construction of Reality". More recently, Habermas (1973) has argued for a critical perspective in research to complement the existing positivist and interpretive stance.

In arguing that research has to be freed from a false objectivism, Habermas (1973) argues that knowledge is never pure in any idealistic sense but is always governed by a variety of interests. That is, human beings can be understood in terms of three broad interests:
A) A "work" interest which is expressive of our need to "control" the natural world to ensure our physical environment;
B) A "communication" interest which represents our need to understand and be understood, and
C) An "emancipation" interest which centres on our need to transcend, to become better than we are.

The problem with relying only on the first two interests is that they purport to offer "neutral" theoretical accounts of educational situations and events and both claim to be "disinterested" with respect to value-laden questions. The critical approach however serves an "emancipatory" interest in demystifying the social condition that distorts rational self-understanding. This paradigm seeks knowledge that frees people not only from the obvious domination and oppression by others, but also from the more subtle forces that operate within institutions and ourselves.

Hence the critical approach goes beyond an understanding of the social world, to a critique of that world. Its approach is dialectical, with the emphasis not on static givens but on datum, subject to change at the hands of individuals.

To perceive dialectically is to comprehend what is essential in a given situation: how a given entity has become what it has become; how its historical past and its individual or collective biography have been objectified; how these inherent characteristics will shape or mould its future developments. To be dialectical is to be critical - it is to see the given as a phenomena subject to change. It is to spell out the transcendent elements, to free the mind from the surface or empirical reality, to engage in imagination of an order beyond the present.

From the above development of a critical theoretical framework, those specific areas that need to be addressed within the vocational context can now be addressed.

AGENDA ONE: Teachers and the Forms of the Curriculum.

In vocational education a purely instrumental view of technical curricula has prevailed. There has been little recognition of the institutionalised nature of the curriculum. Technical curricula has codified existing practices and realised technologies. Knowledge has been abstracted and idealised from the context of technology and work organisation without reference to economic or other principles which generate those practices.

The resulting formality of the curriculum presents many contradictory aspects for the vocational teacher. It creates a disjuncture between practice in the field (the world of work) and the idealised practice of the syllabus and the classroom. The form of vocational knowledge as expressed through the curriculum, develops a life and justification of its own because the formal curriculum is an institutionalised way of thinking about, and managing, technical knowledge.

So strong is the ideology of vocational teaching as a direct transmission of knowledge and skills that views of vocational curriculum development and implementation do not reflect the institutional context and the problems it poses while teachers themselves do not necessarily appreciate the constraints of curriculum forms.

For practitioners who become vocational teachers, their expertise in the professional field is transformed: the formal curriculum in some ways almost invalidates their expertise through a process of abstraction from the world of work.

Thus teachers are faced with a problematic: first, to make sense of the formal curriculum in order to teach it, and to somehow relate their expertise and work experience to the formal curriculum; and second to meet a demand by students for the formal knowledge of the curriculum which will be made relevant to the real world of work through a process of de-idealisation and de-abstraction to be taken beyond the classroom.

From the critical perspective, research on curriculum implementation should examine problems that the formal curriculum creates for vocational teachers rather than to concentrate on the problems that teachers have in the implementation phase. Research needs to explore how vocational teachers think about the formal knowledge of the curriculum, and what teachers do about the problems of formality and idealisation of "vocational knowledge" abstracted from work experience and codified in the curriculum.

AGENDA TWO: Teacher Understandings and Institutions in Crisis.

It is our belief that institutions are not made more adaptive by telling teachers that they must be more efficient or adaptive. This ignores the nature of institutions as places where the work of teaching is practised as a shared professional culture including common teaching practices, making for the reality of curriculum a form of social organization (see Young, 1971; McIntyre, 1986).

It is only when teachers modify their understanding and their practice that the possibility of adaptive change can take place. Therefore the question for research is to investigate how teachers modify their understanding and make change possible.

The rise of an interpretive sociology of education and the development of critical theory has made possible a strongly conceptualized research base on teacher understandings and ideologies of vocational learning (see McIntyre, 198678; Jennings, 1987). Vocational educational research has been very slow to take up this perspective, no doubt because of a narrow technicism. Yet without such a perspective it is impossible to conceptualize how teachers create and maintain curriculum forms.

AGENDA THREE: Identification of the problems that institutional members face in adapting to a changing context.

Change can be explained through a dialectical relationship whereby people and structures interact to engender an ongoing transformative process. A dialectical understanding of this process means that the social reality can be perceived as a constant trarsformation through the mediation of human consciousness. Hence institutional change comes about through the resolution of strains and tensions. The identification of contradictions within the institution may not only enable and facilitate change but may also place constraints on change.

A broad conceptualization of change involves the improvement of existing structures and institutions. The assumption made in this paper is that if we change the individual, the consequence will be the improvement of our institutions and society. Therefore teachers can learn and possibly bring about change by engaging in processes that are transformative.

Jarvis (1987) points out that for as long as there is a continuity between people's own individual stocks of knowledge and the socio-cultural-temporal world there is a reinforcement of the current state of affairs. But when there is a disjuncture between an individual's experience and their world, through transformative processes, then change can take place.

Hence the research agenda becomes one of identifying those transformative processes that both inhibit and assist that change process.

AGENDA FOUR: An involvement by teachers in the process of Action Research in an attempt to empower them to address problems in their practice.

Critical action research involves the problematizing of knowledge through theoretical deconstruction and reconstruction. The process allows knowledge to be viewed as problematic rather than as given, with a focus on the role of power in determining which knowledge is deemed to be of most worth. For teachers, this involves them in seeing teaching alternatives and recognizing that these alternatives have origins and consequences. It makes problematic teachers' taken-for-granted assumptions not only about their practices but also about the institutions in which they work.

In many teaching circumstances, it is difficult for teachers to move much beyond a day-to-day intuitive level. The multiple demands of teaching and the lack of professional support for reflection, provide little incentive for teachers to articulate problems in their practice. However, if teachers could view their teaching problematically, then the next stage is to achieve, through discourse, a reconstruction of the problematic.

The final research agenda opens the way for an active participation by teachers themselves to become researchers of their own practices.

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POLICY CONSTRAINTS TO THE GROWTH OF TECHNOLOGY EDUCATION PROGRAMS: IMPLICATIONS FOR TECHNOLOGY DEVELOPMENT IN NIGERIA

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ABSTRACT

Often times there has been some gap between what is proposed and what is actually accomplished. This gap has been particularly pronounced in the implementation strategies for elements of technology education programs since the inception of formal education and training in Nigeria.

This paper uses archival sources of information to analyse the prevailing situation in order to point out the problems created for Nigeria's technological development vis-a-vis - the development of technological literature. It concludes with some recommendations that could improve the situation.

INTRODUCTION

To the extent that the acquisition of technological values - requisite knowledge, essential skills, desirable work attitudes and/or habits have been identified (Eze, 1984, 1987) as the hall marks for techno-industrial development, most developing countries have assiduously embarked upon deliberate policy changes in their educational systems to reflect the new needs. For example South Korea in 1949, Cuba in 1951, Zambia in 1979 (Akinlabi & Agbomah 1988) have individually introduced new systems of education designed to promote functional literacy and practical acquisition of skills. Tanzania's Education for Survival (self-reliance) of 1967, Togo's Education Nouville of 1975 and Botswana's Education for Kingasmuo of 1983 (World Confederation of Organisation for The Teaching Profession, 1987) are representatives of new initiatives in educational reform aimed at enhancing their capability for technological acquisition.

Nevertheless the apprentice-ship system has remained the basic process for the acquisition of technological skills, knowledge and desirable work attitudes, and of course has traditionally remained an informal system of education. What the current educational reform arrangements have sought to achieve is to formally institutionalise the apprenticeship, and thence to integrate it, through processes like the supervised industrial work experience and on-the-job-training (Eze, 1987), into the formal education and training of technical personnel.

The apprentice system as a method of technical manpower training and development has a lot of merits that recommends its retention and continued patronage, especially as it requires that the mastercraftsman teaches the apprentice the mysteries of the trade in return for the services rendered. Thus it provided at that time, the opportunity for illiterate and rural children of School age to participate in and perpetuate the occupations of their parents when the children are introduced to the elementary vocational - technical skills which the local resources, needs and circumstances demanded (Taiwo, 1974).

The method of imitation and practice (the apprenticeship) incidentally produced good results when it was initially introduced and widely practised. For example, the famous Benin bronze and ivory carvings which date back to the 16th Century (Nduka, 1964) were produced when the apprenticeship and parent-child instruction were the only skill training methods that prevailed.

ATTEMPTS AND CONSTRAINTS

On their arrival in Nigeria, the obvious and most immediate needs of the missionaries, British traders and the colonial administration was to train the personnel who could assist them in evangelisation, commodity trade, and the various aspects of administration. Thus the curriculum of the Schools founded at the time reflected emphasis on literacy and communicative competence, and therefore there was a lot of respect, societal regard and per-quisites attached to the job whose descriptions and qualification for entry depended on such competencies which the new education provided. In response to the new emphasis in manpower development, the natives gradually abandoned their traditional and local crafts and skills, and indeed and painfully so, their established methods of technical manpower training, especially as it has now become more difficult to find a willing apprentice.

A few mission schools which still believed that there was need to continue to provide some education and training in technical skills introduced some skills/value in the school /of curriculum, and strenghtened handiwork and the practice of agriculture. For example at Abeokuta in 1984, the mission school at Behule had workshops for Blacksmithing, wheelwrights, carpentry and shoe-making (Colonial Report, 1908).

Thereafter several attempts were made to introduce vocational-technical education in the school curriculum.

The Education Ordinance of 1887 did provide for increased Government grants - in - aid for agricultural and industrial-technical education activities which included gardening, sewing, handicrafts, arts and domestic science. Because of this provision the schools began to include vocational and technical skills in their curricula. Thus the curriculum of the Bonny Boys' High School in 1900 included carpentry, coopering, woodworking, typing and telegraphy. About the same time at Hope Waddel Institute, Calabar the students received instructions in tailoring, carpentry, painting, agriculture among other crafts and literary subjects (Education Ordinance, 1887). In Northern Nigeria, the Nassarawa School which opened in 1909 operated vocational-technical program where latherwork, carpentry, smithing, weaving and bookbinding were taught (Graham, 1966). These institutions although pioneers in this field, did not hold a monopoly. There were other schools which sooner or later started technical education programs.

Even though, these programs for the development of technical skills were introduced in the curricula of these schools, teaching of the subjects was often ineffective because there were no technical teachers and no funds to train them and purchase costly equipments for the workshops. The colonial government in Nigeria was reluctant to liberally finance technical education in the colonies not only because of inadequate finances, but because of the Victorian Government's liassez-faire policy towards the colonies (Nduka, 1964). Furthermore, the administration was particularly cautions to "... gradually introduce progress" (Colonial Report, 1908) so that the fabric of the native society would not be disintergrated by the shock of the new civilization and its modernization. The financial policy pursued by the government was based on the assumption that technical education was expensive and like other social services, produced no immediate returns to balance the recurrent expenditure from the government, and therefore Nigeria could only be provided as much and the type of education it could afford. This policy, although apparently solved the immediate problems, did not plan for the future since it failed to recognise that expenditure on technical education is an investment for future technological development.

Apart from the efforts of some missionaries to introduce [illegible] skills of value, and in developing agriculture and [illegible] the development in technical education was still limited. Nigeria with its peasant-based economy at the time lacked the capital resources and the manpower to support technical education programs in the formal school setting.

Later on, increase in economic activities requiring technical expertise made the need for vocational-technical education more obvious. For example, the Railway line started from Lagos (South) in 1896 and reached Jebba (Mid North) in 1909; and from Port-Harcourt (South) in 1914 and reached Enugu (East) in 1916. These agricultural and mineral resources (Tin in Jos and Coal in Enugu) were being tapped and carried by rail, road and river to the main ports of Lagos, Warri, and Calabar for shipment to overseas markets (Nduka, 1964). Most of these operations required the expertise of certain grades of technical personnel to keep the system functional. Because of this increased need for supporting technical staff, commercial and industrial establishments initiated technical training in their workshops.

The Phelps-Stokes Reports on Education in Africa (1920) devoted much space to positive recommendations on vocational and technical education and on what preparation for work could be initiated in the schools. By 1925, the Memorandum on the Educational Policy in British Tropical Africa, and a subsequent Government White Paper on it, provided, among other things, that education should be adapted to the mentality, aptitudes, occupations and the traditions of the various peoples, and that technical industrial training should be given in government workshops provided a proper instructor was available (Education Policy in British Tropical Africa, 1925). This meant that active government participation was essential in technical education which required more costly equipment and qualified teachers.

Soon after the government Departments of Agriculture, Ports Authority, Post and Telegraphs, Public Works as well as Marine joined in the provision of Technical training in their workshops. Later on, the Shell-BP, the Mobile Oil and E.C.N. (later the

National Electric Power Authority) joined to train their workers on the job. By 1930s, the Nigerian Middle Schools (now the Secondary Schools) were to combine literary and technical education. Thus, mathematics, technical drawing, woodworking and metalworking became part of the school curriculum, (Hussey, 1930).

Within the period (1925 - 1940) other attempts were made. In Lagos, the Education Department tried to develop an apprenticeship system in a variety of trades but there was minimal cooperation from the mastercraftsman. Another bold experiment, this time, in cooperative training by the Department of Agriculture, aimed at establishing land agriculture for those who had completed primary school failed, because it was not of interest to many people. Thereafter, the missionaries tried a project in training for better rural living at Asaba, but the high hopes of the originators were smashed due to lack of interest and encouragement. The poor results of these and other attempts to develop vocational - technical education were in part due to the fact that the planning was based on theoretical considerations that did not consider the local needs and the available resources.

With the 1925 Policy in the background, the (1941 - 50) Ten-year Development Plan provided inter alia, for the intensive development of vocational-technical education, the establishment of Rural Education Centres, and a Mass literacy program all of which were intended to make education more functional. Thus, the Yaba Higher College (opened in 1934) concentrated in the training of technicians for specific jobs and for specific places in government and industrial establishments (Wieler, 1964). This kind of human resource development was essentially vocational. It must, be mentioned to the credit of Yaba that in the course of time, it turned out a good number of Nigerians who did valuable work in the fields of engineering technology, teaching and medicine. In course of time, the educational programs at Yaba were expanded to include commercial and business courses in economics, bookkeeping and shorthand. The Yaba products were able to effectively occupy responsible positions in government and industry.

But unfortunately the zeal enkindled in the hearts of Nigerians by the programs in Yaba began to divindle. The Yaba graduates, however able they were, could not rise above the level of assistants on their jobs (Wieler, 1964). Such a situation was naturally frustrating, especially as their counterparts who were trained in similar institutions in Britain were graded higher by the employers in government, business and industry. In the institution itself, the students were exposed to discouraging and stifling situations "commending" the illusion that that brand of education was not good.

At this point in this discussion, it is very tempting to conclude that some significant progress in introducing vocational-technical education in Nigeria has actually been made, but the success recorded has not matched the efforts. Specifically, the progress has been limited by the constraints of social and economic factors. Almost everything, including cultural background, conspired to render the laudable efforts ineffective, Not only were the professions (medicine, law, teaching, etc.) as well as the clerical and administrative careers which arise out of the literary education more regarded in society, but they were better paid by the employers. Indeed by 1951, when the survey on African Education sponsored by the Nuffield Foundations and the Colonial Office was conducted, it was clearly revealed that the lofty ideas of the 1925 Education Policy statements did not quite produce the desired efforts. Specifically, the type of formal education provided at the time, was found not yet adapted to the occupations and traditions of the Nigerians.

It is desirable to emphasise by pronouncements the goal of adaptation of formal education to the needs and traditions of the people but it is of paramount importance for the adaptation to be successful. The initial direction given to formal education in Nigeria had some crucial roles to play in the subsequent disregard for the dignity of labour for which vocational-technical education amply provided the opportunity. It is my view that if the development of agriculture, crafts, and skills of value had been encouraged alongside the literary education, the situation might have been different since the people were originally peasant farmers and craftsmen. For example, recent anthropological and metallurgical researchers reveal that "as far back as

2000 years ago, the Haya people of Tanzania were producing medium carbon steel in preheated, forced draft furnaces" (The Times, 1978). This discovery among others, will help to lay to rest the somewhat scholarly and popular belief that technological sophistication developed in Europe but not in Africa (Nwokike, 1986). It is my view that Nigerians, like other Africans were involved in early technological development but the educational orientation of the 19th century probably diverted their attention to literary education.

By 1955, the Chief Federal Adviser on Education invited a Committee to advise the Nigerian Federal Ministry of Education on the development and training of middle level personnel needed for the business and industrial establishments in Nigeria (Federal Government of Nigeria, 1959). Since the situation centered around the technical and commercial education requirements of the employers in Nigeria, a Federal Policy on technical education became necessary. When the Reports of the Committee were published, the findings and the recommendations reflected the pattern of technical education and skill training of the United Kingdom, and hardly offered any forward looking policy related to Nigerian local needs.

The failure of the Reports, in this respect, was essentially due to how the initial planning for the vocational and technical education was started, rather than due to economic and/or political interests. It must be remembered that most of the people qualified to be members of the Committee were trained in Britain and could therefore, hardly avoid some element of subjectivity in their judgements, essentially because of their predisposition to favour their own professional training and experience. The Reports further revealed lack of adequate information concerning the technical manpower needs and training requirements of the employers some of whom *even failed to cooperate in providing the needed data (Federal Government of Nigeria, 1959). The employers hardly appreciated the need to determine their manpower requirements and to plan training for skilled workers. This was a major defect in the provision of vocational-technical education because the efforts of the Ministry in planning for vocational-technical education were thus made ineffective.*

By the year of Nigeria's Independence, Ashby (1960) conducted an investigation on the Investment in Education in Nigeria. The Ashby Commission drew attention to the poor attitude toward vocational-technical education and its regrettable neglect as a means of establishing the dignity of labor. The irrational practice of sending only drop-outs and mediocre students to the trade centres and technical institutes was deplored by the Ashby Report. But unfortunately the vestiges of this obnoxious practice still persist at least for admission to the Polytechnics. The strong bias in favour of traditional, literary and academic subjects was found to be responsible for the public disregard for manual skills and technical achievements.

Furthermore, the Ashby Report strongly recommended increased attention to vocational technical education, and gave useful projections for the middle level manpower requirements for Nigeria. It was these recommendations that triggered off the processes for the establishment of various types of vocational-technical education institutions including the Polytechnics, Colleges of Technology and the Department of Vocational-Technical Education at the University of Nigeria, Nsukka. Fortunately by this time, the oil industry has started to yeild revenue for Nigeria and this made money available for development of various infrastructure which required the inevitable input of skilled labour. Additionally, the oil industry itself and the increased projects development re-emphasized the need for various categories and levels of skilled workers.

The 1969 Curriculum Conference provided the opportunity for technical education experts, planners and industrialists to demonstrate resentment for and to repudiate the unfortunate emphasis on literary education and the abandonment of the apprenticeship system. The outcome of the Conference was radical : a new national education policy (the 6 - 3 - 3 - 4 system) was born, the Policy document published in 1979 and revised in 1981, and the subsequent Government White Paper reaffirmed the importance of technical education.

CONCLUSION & RECOMMENDATION

The wrong initial approach to education, poor planning limited financial resources and societal apathy were the initial constraints to the development of vocational-technical education in Nigeria. Additionally the bias in favour of literary education, and the initial low level of economic development in Nigeria exercised limiting effects on the advancement of the programs. The needs of the time and the background of the later planners had their own strong influence on educational policy. There was remarkable gap between what is proposed and what is achieved. Nevertheless, the educational planners at the time did their best considering the peculiar circumstances under which they worked. Today the circumstances have considerably improved, and new needs and demands have emerged. Thus, positive and realistic attention toward vocational-technical education programs in Nigeria is imparative if technological development in Nigeria will be a reality.

Therefore, in order to create a solid foundation for technological development in Nigeria, strategies that should promote technical education programs should be actively pursued. Adequate financial support should be provided for the development of the necessary infrastructure and human resources required for vocational-technical education. Sufficient and detailed plans are required to avoid crash - programs. The government should be seen as doing, in all forms, what is proposed for technical education: The unnecessary lag between proposal and accomplishments should be minimised. Conscious effort should be made at increasing the students' opportunity for the acquisition of practical skills by ensuring exposure to practical learning experiences at the school workshops and the relevant industries. The use of the local resources (road side mechanics, radio repairmen etc) as sources for students' practical experience should be explored and pursued. Skill development centres and or workshop service units should be intergral parts of well planned technical education programs. These postures may assist the research personnel to capture and document valuable aspects of the mysteries of technical trades. This may be the beginning of the required research for and the production of technological literature which Nigeria honestly needs now.

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ECONOMIC GROWTH, INVESTMENT IN TECHNOLOGY AND THE CONTEXT OF NEW ZEALAND VOCATIONAL EDUCATION POLICIES

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ECONOMIC GROWTH, INVESTMENT IN TECHNOLOGY AND THE CONTEXT OF NEW ZEALAND VOCATIONAL EDUCATION POLICIES

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The outcome of the relationships between post-compulsory school retention rates, investment in technological education and economic growth has presented New Zealand policy makers with a complex and interrelated set of problems that are accentuated by comparisons with other small OECD countries (Bubendorfer 1985; Stevens 1988).

PROBLEM ONE : NEW ZEALAND POST-COMPULSORY SCHOOL RETENTION RATES

When New Zealand young people aged 16-19 years of age attending educational institutions are compared with their counterparts in Austria, Denmark and Switzerland, it becomes apparent that different attitudes towards higher education exist in Europe and the South Pacific.

TABLE 1

POST COMPULSORY SCHOOL RETENTION RATES : NEW ZEALAND AND SELECTED SMALL OECD COUNTRIES

	AGE IN YEARS			
	16	17	18	19
New Zealand (1982)	74.4	46.5	32.6	30.9
Austria (1981)	87.1	83.7	76.5	45.6
Denmark (1980)	86.0	68.0	61.0	50.0
Switzerland (1983)	85.9	81.6	73.1	52.8

(Bubendorfer, 1985)

PROBLEM TWO : THE NATURE OF POST-COMPULSORY EDUCATION UNDERTAKEN IN NEW ZEALAND

The nature of post compulsory education undertaken by young New Zealanders also differs from their counterparts in Austria, Denmark and Switzerland, as shown in Table 2:

TABLE 2

THE NATURE OF POST COMPULSORY EDUCATION : NEW ZEALAND AND SELECTED SMALL OECD COUNTRIES

		NZ	Austria, Denmark, Switzerland.
1	No formal Vocational Education/Training	60%	5%
2	Professions	16%	15%
3	Technicians	13%	35%
4	Trades	11%	45%

(Bubendorfer, 1985)

PROBLEM THREE : TECHNOLOGY-BASED EXPORTS, PER CAPITA GNP AND ECONOMIC GROWTH

An anyalsis of New Zealand's technology-based exports (as a percentage of its total exports) differs markedly from the exports of Austria, Denmark and Switzerland.

TABLE 3

1983 PER CAPITA VALUES ($US) OF TECHNOLOGY-BASED EXPORTS AS PERCENTAGE OF ALL EXPORTS : NEW ZEALAND AND SELECTED SMALL OECD COUNTRIES

	TOTAL EXPORTS	TECHNOLOGY EXPORTS	% OF TECHNOLOGY BASED EXPORTS
New Zealand	1700	110	6.5
Austria	2082	730	35
Denmark	3113	851	27
Switzerland	3982	2426	61

(Bubendorfer, 1985)

The relationship between technology-based exports (see Table 3), Per Capita GNP and Economic Growth rates (see Table 4) for New Zealand and the same three small European OECD countries suggests a link between investment in technology and economic health.

TABLE 4

PER CAPITA GNP (1982) AND PERCENTAGE GROWTH RATES (1973-1982) : NEW ZEALAND AND SELECTED SMALL OECD COUNTRIES

	PER CAPITA GNP ($US)	GROWTH RATES (%)
New Zealand	7910	0.4
Austria	9790	2.7
Denmark	12350	1.5
Switzerland	16960	0.8

(Bubendorfer, 1985)

New Zealand's low retention rates in post-compulsory education (in comparison with Austria, Denmark and Switzerland). together with its high rate (60%) of school leavers with no formal vocational education and training, provides a weak basis for technological development and growth based on this sector of its economy. In Austria, Denmark and Switzerland, 70% of school leavers enter either trade or technician-level training providing each of those countries with a strong basis for technological development and economic growth.

THE DEBATE OVER CURRENT NEW ZEALAND VOCATIONAL EDUCATION POLICY POSITIONS

1 The Ministerial Working Party Position (Beattie, 1986)

(a) Economic growth and "future prosperity" will be achieved by reorganization of New Zealand's existing system of vocational education through increased commitment by Government and a closer relationship between classrooms and industry. The lack of New Zealanders' scientific and technological literacy is recognized as a major problem.

(b) The potential for greater economic growth in New Zealand is through innovation and the origin of innovation is research and development. Innovation is defined as "the transformation of an idea into a new or improved saleable product or operational process in industry or commerce of into a new approach to a social service".

(c) Innovation can be generated by both "market pull" and "technological push".

(d) A significant part of New Zealand's Research and Development in technology should be recognised as a "public good" and be supported by public funds, particularly where:

  - (i) R and D costs are excessive in relation to the state of the industry
  - (ii) Where an enterprise cannot appropriate sufficient benefits of the innovation itself
  - (iii) Where the lead time necessary for R + D exceeds the normal time scale used by a firm for evaluating return on investment
  - (iv) Where the risk of failure of a project is regarded as excessive by sources of venture capital.

2 The New Zealand Treasury Position (Fancy, 1987)
According to the New Zealand Treasury, the following areas require attention for policy development in Vocational Education.

(a) General policy : must have regard for the regulatory environment and the extent to which existing policies might impose bias against research and development.

(b) Public Sector R + D : Need to move away from 'user pays' solutions and establish long-term commercial approaches to R + D "with appropriate financial structures".

(c) Non-appropriable Research : Clearer separation of appropriable from non-appropriable research should be encouraged. There is a need to consider those areas where private sector R + D could be justified as well as basic research the Government may wish to encourage.

(d) Education : A complex area as R + D is co-produced with education (eg in Universities). There is a need to identify and justify the extent to which non-appropriable research is undertaken in universities and the basis on which such institutions should be able to compete for contract research.

DISCUSSION

The New Zealand Treasury position is to recognise the role of innovation in economic growth, but it argues that Beattie's position is over simplified and overstated. According to the Treasury position, the contribution of technological innovation to economic growth is dependent on "a well functioning economy". The prime source of economic growth is therefore the NZ Government's economic policy reforms which provide a basis for innovation in the longer term. Treasury further argues that Beattie does not adequately recognise the linkages between technological innovation and economic growth. In particular, Treasury recognizes problems in drawing resources towards "research intensive activities" at the expense of "more productive activities in the economy".

According to the New Zealand Treasury, the process of innovation goes much further that the application of formal R and D. Much innovation is a result of processes of small adaptations to existing products to meet a perceived market need rather than a conscious decision to invest in R and D itself. Small scale adaptations are recognised as being very important to economic development as they take place on a wider scale than formal research. A key driving force in small scale adaptations and innovations is the competitive pressures of the market place and liberalization of access to markets. Such factors, Treasury argues, speed up the rate of innovation and promote economic growth.

According to the New Zealand Treasury, only Beattie's position (d,ii) is valid - ie. the extent to which R + D can be appropriated by the enterprise attempting to innovate. The key policy issue in Treasury's view is to identify the link between undertaking R and D and appropriating the benefits by private sector initiatives or public policy changes.

CONCLUSION

The current debate over New Zealand's vocational education policy must be interpreted in the context of its weak technological manpower base and, accordingly, its relatively low rate of R and D. This is reflected in New Zealand's low percentage of technology-based exports and its rate of economic growth. While this is the subject of much discussion in New Zealand (McDonald 1985, O'Donnell and Troughton 1986, Stevens 1988) it appears that the key to development in New Zealand vocational education, R and D, innovation, the development of technology-based exports, and, ultimately, economic growth, is the formulation of a coherent and unified philosophy of technological education

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PHILIPPINE SOCIAL AND ECONOMIC IMPERATIVES FOR VOCATIONAL EDUCATION

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Department of Education, Culture
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Republic of the Philippines

The Imperatives: An Overview

Vocational and technical education in the Philippines, as is possibly true in almost all countries, is designed to respond to the increasing need for middle-level technical expertise needed by the economy as well as for self-employment.

The social and economic conditions within which Philippine education operates infringes heavily upon such a response. Recent developments as well as research have shown that there are interacting forces at work and must be reckoned with. Foremost among them is the earnestness of the new government under President Corazon C. Aquino to eradicate poverty, bring about economic recovery and promote social justice, all at an accelerated pace. On the other hand, there are forces unleased during the last two or three decades which stand in the way of positive action. A deteriorating economy, social confusion, unstable peace - these, among others, have retarded, sometimes prevented, the pursuance of efforts to bring about the needed correctives. On a broader context, certain global problems have tended to aggravate such conditions. The imbalance of international trade alone has kept the country importing more than it is exporting. This is further abetted by an unusually heavy external debt the servicing of which draws away much-needed funds from the mainstream of the national economy.

Well-meaning friendly countries have offered assistance, all deeply appreciated. However, there are terms and conditions of such assistance which, despite the goodwill associated with them, render the country more as an end-user and less as a producer of industrial equipment, products, and services. Vocational and technical education within this context has been the means, whether deliberate or inadvertent, for the furtherance of such a condition.

Perhaps, there are advantages such as transfer of technology and the trimmings of modernization. There is a general acceptance of imported technology and commodities as, in fact, Filipinos find it easier to buy and consume imports more than local products.

There are earnest efforts to correct this, among which is the Buy-Filipino Movement. But even the head of this movement admits that such locally-produced appliances as refrigerators must not be made to appear they contain locally-made components.

What Research Says

What does research say about the role of vocational education in coping with such social and economic situations as these?

First of all, a search for studies on the subject revealed the critical paucity of relevant research in the Philippines. Much of the available literature on vocational education is from abroad.

In a survey of major researches on Philippine education since 1924, the writer found only one that dealt directly with vocational education, namely, the Prosser study of 1930 which produced a general report on vocational education at the time. It proposed measures to improve various aspects of vocational education. (Elevazo, Aurelio, Educational Research in the Philippines, Manila: Unesco National Commission, 1968.) Other studies are primarily those undertken after the passage of the Education Act of 1982 which mandated the creation of the Bureau of Technical and Vocational Education within the then Ministry of Education, Culture and Sports. Prior to this, technical and vocational education was fragmented: work education at the first level, cursory vocational subjects at the secondary level, and a smorgasboard of technical courses at the tertiary level in public and private colleges, ranging from beauty culture to electronics and, lately, computer literacy and programming. Graduates compete for employment in the insufficient number of available jobs in business, industry, and government; the more enterprising seek employment abroad. They constitute the country's manpower export. (Abella, Manolo, Export of Filipino Manpower, Manila: Institute of Labor and Manpower Studies, Ministry of Labor).

Upon its establishment, the Bureau of Technical and Vocational Education (BTVE) girded itself to cope with the tasksassigned to it, namely:

a. Formulation of plans for technical-vocational-level manpower goals and requirements;

b. Conduct studies and formulate, develop and evaluate all post-secondary technical-vocational programs, and recommend the necessary educational standards for such programs; and

c. Develop curricular designs and prepare instructional materials, ... upgrade the quality of teaching and non-teaching staff, and formulate guidelines to improve the physical plant and equipment of post-secondary vocational-technical schools. ("The Education Act of 1982," in the MECS Journal Supplement, February 1983).

The studies undertaken by the Bureau during its five-year existence so far have concerned (1) curricular review, (2) regional consultations, (3) a school mapping survey, (4) profile analysis of senior high school students, (5) public hearings to rationalize technical and vocational education, (6) relating BTVE with secondary vocational education programs, (7) development of standards for the 1-2 year technical courses in agriculture, trades, fishing, craftsmanship, and non-traditional courses (DECS Order No. 60, s. 1986), (8) commissioning of an expert group to develop and measure minimum standards for Technical and Vocational Education, (9) study to establish a national network of TVE schools, (10) preparation of the Technical-Vocational Act, now being considered by Congress, (11) inventory of livestock in agricultural schools and colleges, (12) development of a technical-vocational manual of information, (13) survey of technical-vocational reference materials, (14) study of qualification standards, hiring procedures, salary, and other requirements in selected industries in Metro Manila, (15) cataloging of thesis and dissertations (1977-1987), (16) survey of agricultural, industrial, and service establishments, and (17) establishment of linkages between technical-vocational institutions and industry, the Department of Trade and Industry, and the Department of Labor and Employment. (Esteban, Pedro, "Philippines: Research and Development in Technical and Vocational Education," 1989; and Guiang, Alcestis, "Research-Oriented Developments in Technical-Vocational Education," 1989).

Started in 1987, there is a continuing assessment of technical-vocational institutions with a view to the further upgrading of their shops, facilities, laboratories, faculty, and other resources.

In general, the foregoing studies reveal evidence of a lack of importance given to vocational and technical education prior to 1982, but an emergence of awareness of its importance to national development after that. Its place in Philippine education has just been confirmed by the Secretary of Education, Culture and Sports who stated during the culmination ceremonies for the recently completed Technical and Vocational Education Project (TVEP) that "the key to the solution of the national problems of poverty, employment and social justice is technical and vocational education." This eloquently reflects the new mood of the new educational leadership which is evidently supportive of strengthening this sub-system of Philippine education.

Performance Assessment

In an assessment of performance recently made by the Office of Planning Service, DECS, the following major accomplishments during the assessment period of the first year of the Five-Year Development Plan (1986-1987) were noted:

a. An increase in the number of schools (194 in 1985-86 to 208 1986-87, and an increase in enrolment from 180,051 in 1984-85 to 235,000 in 1986-87. This is indicative of a new shift of interest in technical-vocational education;

b. Curriculum revision in all areas; formulation of new policies and standards;

c. Staff development through national and international training programs; and

d. Establishment of new support mechanism through affiliation with technical and vocational education-relation organizations. (Office of Planning Service, An Assessment of the First-Year Implementation of the Medium-Term Plan (1987-1992), January 31, 1988.

Continuing Problems and Needs

It must be pointed out, however, that there continue to be fundamental problems and needs that have yet to be fully addressed by the technical-vocational effort, despite the impressive performance of the TVEP.

The foregoing problems and needs emerged basically from experience, although cursory research had provided evidence to corroborate their validity:

On the need for a closer match

The most acute mismatch is between the output of a curriculum predominantly oriented to modern industry and the manpower demand of the national policy of rural-based industrialization. Such manpower demand is in terms of the need for expertise that could produce industrial goods and commodities from the raw products of agriculture and the country's vast natural resources in its forests, mines, rivers, lakes, seas, and so forth. For example, the country continues to export coconut copra whose prices are ironically determined abroad. Agro-based industrialization means developing a capability to manufacture refined coconut oil into forms needed in producing industrial products such as soaps and detergents, perfumes and medicines. Under present circumstances, the country exports copra at very low prices and then import goods produced from it at fantastic prices. Hence, the balance of trade and the balance of payments remain negative in favor of the industrialized countries which continue as our primary trading partners.

What aggravates this situation is the persuasive imposition by donor countries which, in their desire to improve vocational education, have tended to help improve the curriculum, training, and research, all of which are heavily oriented to the development of skills and attitudes that make the country unduly dependent on their industries. The most recent example of this is the newly completed Technical and Vocational Education Program (TVEP) which was provided with a substantial project loan and a corresponding government support counterpart for 5-1/2 years. The project developed what is known as the Improved Post-Secondary Industrial Technical Curriculum in such areas as electronics, mechanics, refrigeration/airconditioning, welding/fabrication, and civil/construction trades. Equipment for these learning areas are almost all imported. This means that, to maintain them in good repair, we must keep importing spare parts from other countries. While it may be argued that the development of skills in these learning areas may also contribute to agro-industrial development, the argument cannot be sustained if there is no corresponding effort in developing such industries, in the first place.

Agriculture, the country's primary source of economic production, continues to be manned by farmers who are poorly trained and the introduction of agricultural technology has been very slow. There are a few farmers who harvest over a hundred cavans of rice per hectare, big banana and pineapple plantation owners, big poulty raisers, and foreign-supported fish and prawn farmers, but the production of industrial products from their outputs is relatively negligible, and such production continues to be under predominantly foreign-owned corporations which have been granted franchises to operate huge tracts of land and sea resources. A few have set up canning factories licensed by multi-national corporations. There is also the nagging problem of the lack of confidence on the part of expatriate experts of the multi-national corporations towards Filipino expertise, impliedly blaming the Philippine educational system of vocational education as being incapable of producing needed skills.

Entrepreneural Education

The medium-term plan for 1987-1992 has explicitly embodied the policy of entrepreneural education. This concept is addressed to the problem of unemployed educated, and the practice of training young people only for employment in existing or stipulated jobs. (Medium-Term Philippine Development Plan,, 1987-1992, pp. 6-14, para. 4.1.4) The idea is to equip students, particularly those in technical and vocational education, with skills needed to enable them to establish their own income-generating enterprises, and how to make such enterprises grow. This is a new kind of skill which calls for the development of interrelated skills at all levels, including management.

Existing conditions, however, provide a relatively unfavorable climate within which small entrepreneural enterprises could be developed. Experience has shown that such enterprises have had to contend with competition from the established bigger ones. Inexperienced entrepreneurs have tended to back out and gradually sell off their enterprises.

It is the Chinese community in the country which has succeeded in training their own people to become successful entrepreneurs because the Chinese have a mutual support system among themselves, and there is a built-in flexibility in the manner in which they manage their enterpises. By and large, the Chinese entrepreneurs are trained in their own schools, and they keep to themselves their own trade secrets.

There is also the problem of marketing. Local products do not enjoy a level of patronage as high as that accorded to imported products. Somehow, the psychological make-up of the Filipino buyer has pre-disposed him to giving more value to those that are imported from abroad. The net effect of this is the lack of capacity on their part to employ better skilled manpower. Thus, the problem is cyclical in nature because local enterprises cannot employ better skilled workers that cannot produce better quality products which demand relatively low prices.

The Need for Productivity Education

As already mentioned, Philippine education is generally consumer-oriented. There is a need to develop productivity consciousness. Government itself has been alarmed by the low productivity of government employees. Hence the campaign for productivity at work.

These problem has its roots in the kind of education that has been instituted at the turn of the century during which teachers, books, equipment, and other school paraphernalia were all imported. The American colonizers, with all their humanistic fervor, considered it proper to superimpose into the existing mode of thinking an orientation that would make the Philippines a potential market for western ideas and commodities. So successful was the effort that today anything made in the United States is considered high quality, and people think they have a higher social status if they can afford to buy imported goods.

There is a semblance of abundance and modernity in the big department stores, and in the affluent residential villages of the rich and middle-income families in Metro Manila and other urban centers of the country. This facade of affluence and modernity belies lthe deprivations and sufferings of the greater majority of the people many of whom have incomes below the poverty line.

Technical and vocational education needs to address itself to the development of skills not only for the modern sector of society but also for the greater number of people so that their capability to derive income from resources available to them would increase. This means that technical and vocational education must address itself to making farmers better farmers, fishermen better fishermen, and so forth, and gradually develop a capability for them to establish their own industries for manufacturing industrial products from their raw products, so that they would command more competitive prices.

Low Regard for Blue Collar Jobs

This is one of the attitudes of young people that militate against technical and vocational education. Hence, the attractiveness of technical and vocational courses has been relatively weak. Unless forced by circumstances, many students do not willingly enter into technical and vocational studies. There also appears to be a relatively lesser dignity of those who enroll in vocational courses in relation to those who are admitted in academic programs. The general notion is that those who are bright and intellectually gifted deserve to pursue degree programs, but those who are less in doubt must be satisfied with technical and vocational courses. It is reasonable to expect that there are many students of tech/voc programs who have merely drifted into them for not having any other choice or were forced by circumstances.

Such a condition needs to be changed. Tech/voc education itself must demonstrate that, in the first place, there is a future in technical/vocational education. Its graduates must be of such quality as to be able to command respect from their employers or are able to succeed in their own business ventures. Until such time, the general tendency will continue to be for students to aim for white-collar jobs in some air-conditioned office.

It is encouraging that during the last two years, there has been an appreciable increase in the number of students in certain areas of technical-vocational education. If the trend must be maintained, job opportunities for tech-voc graduates must be increased, and the climate for new entrepreneurs must be improved.

Inadequate Science and Mathematics Education

There are certain aspects of technical and vocational education which require a relatively high level of skills in science and mathematics. Electronics and computer education, for example, are among such areas. Available research has shown that the level of knowledge and skills developed by science and mathematics education remain to be short of expectations. Hence, there is today a great deal of effort to strengthen science and mathematics education at the first and second levels. There is a massive retraining of teachers, and textbooks are being updated. Science laboratories are also being improved.

It is expected that this effort will improve the quality of students not only for the profession but also for the technical and vocational trades.

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WORKSHOP G

Theme: Equal opportunity in vocational education.

Tuesday March 14. 11.00 am; Thursday March 16. 3.30 pm.

Adelaide Room 1

Ms. Pauline Mageean. Research and Development Officer, TAFE National Centre for Research and Development. *Overcoming Distance: Isolated rural women's access to tertiary education.*

Dr. Iluminada G. Espino. Faculty Consultant, Colombo Plan Staff College of Technician Education. *Women Technicians Self-concepts, Problems and Training Needs.*

Jasmine Payget. Equal Opportunities Unit, South Australian Institute of Technology. *Participation of Women in Technical Education.*

Claire Kelly. Labour Market Programs. Adult Migrant Education Service. New South Wales. *Equal Opportunity in Vocational Education.*

ALMOST INVISIBLE: ISOLATED RURAL WOMEN'S ACCESS TO TERTIARY EDUCATION

PAULINE MAGEEAN

Paper for the TAFE National Centre's
International Conference, March 1989.

INTRODUCTION

This project was funded by a Rural Women's Access Grant, through the Department of Primary Industries and Energy. It examines the key factors which affect mature aged rural women's access to tertiary education and in particular to TAFE and how these factors have been dealt with in successful programs. The special needs of disadvantaged groups were considered in separate chapters.

Rural women have a tradition of putting their needs last, after those of their husbands and children. They tend not to be assertive in their requests for their rights. This coupled with their distance from urban policy-makers, has made this group almost invisible to those determining educational programs.

METHODOLOGY

- A network was developed of rural women, those involved in providing educational services for them, and other researchers in the area. Group interviews were arranged through this network.
- Calls for submissions to the project were widely circulated to obtain more first-hand information. A total of 187 responses were received representing over a thousand rural women.
- Interviews in person and by telephone were also conducted with TAFE staff involved in the provision of education for this group.
- Visits were made to eight successful TAFE courses for isolated rural women to observe the programs in action and interview participants and staff.
- Relevant literature was reviewed including course evaluations, newsletters, government reports, journal articles and books.

FINDINGS

There are a number of key issues in the education of isolated rural women:

Major barriers to rural women's participation in tertiary education are:

- physical distance compounded by isolated and often unmade roads, the high cost of petrol and lack of public transport;
- time for this travel, the need to fit in with school timetables and seasonal farming pressure times;
- child-care for pre-schoolers and after school care for older children. Often there are no child-care facilities in small communities and no nearby neighbours;
- the low value our society gives to the unpaid work traditionally done by women. Consequently many women underestimate their skills and aptitudes. This frequently reduces their confidence to return to study. Similarly, rural communities are often more traditional in categorising work as 'mens' or 'womens' and those women who undertake non-traditional work or training may be criticised or ridiculed;
- an emphasis placed by many country people on practical skills rather than theory and a concept that tertiary study is not relevant to their lives. This can lead to women feeling that study could be seen as an affectation and separate them from their social group.
- the stereotyping of TAFE as a 'male organisation'. Many mature age rural women will not consider that it has much to offer them unless a 'woman friendly' environment is developed and marketed.

The needs of isolated rural women are:

- to move into non-traditional areas of agriculture as the nature of farming changes and becomes more dependent upon technology and less on physical strength;
- to supplement farm earning by off-farm work or other entrepreneurial work due to the rural recession;
- for courses in both traditional and non-traditional areas as many look at ways of earning money or supplementing family income in areas such as dressmaking;
- for courses which provide the option of formal assessment and, where appropriate, articulation into, or credit towards, more advanced courses;
- for time to be allowed during the planning stages of programs to research potential employment areas, including viable entrepreneurial activities which students could undertake.

Ways of overcoming the barriers and meeting needs include:

- community involvement. Potential students should be represented in decision making at all stages of the program. The community should 'own' its program by defining its own needs and participating in decisions as to how best these could be met and what should be offered - where, when and by whom;
- bringing the program to the women, whether locally such as in halls or schools or by distance education;
- providing an opportunity for human interaction and the sharing of educational experiences through tutorials, interactive technology etc;
- women-only groups, designed for and by women which provide a supportive environment while the women gain skills and confidence;
- gaining the most from the limited resources by avoiding duplication of programs and resources provided by other educational and community organisations. It is important to co-operate with existing community networks at all stages;
- flexibility and choice in courses offered to rural women as there are fewer potential students to fill specialised courses;
- making available subsidised child-care for all students who need it;
- making available detailed information about courses. This information should relate the courses to rural women's interests and experiences.

Rural Aboriginal women want:

- to be taught the skills which will enable them to manage their own lives and communities;
- to participate at all stages of developing their programs - they do not want to be 'given' a program;
- their own women to be given the skills and opportunities to teach the courses targeted for Aboriginal women;
- programs to be delivered to them where they are, not to have to leave their communities;
- special support for Aboriginal women who are not living in communities or must leave them to attend educational institutions.

RECOMMENDATIONS

The following recommendations were made in the report:

- Subsidised child-care be made available for all students who need it at all TAFE colleges. For courses organised by TAFE at other venues it should be provided through other means such as mobile child-care or family day-care.
- A percentage of positions in all programs for which there is likely to be demand from rural women be held to allow country people extra time in which to apply.
- Central planning pay particular attention to resources for those groups who are not being catered for adequately in mainstream provision.
- Programs for isolated rural women include, as far as possible, self-paced learning and a wide choice of electives to cater for individual differences in ability and interests.
- Programs be based, as far as practicable, on the expressed wishes of the students and the community.
- Training be offered to rural women in as wide a variety of vocational areas as practicable including both traditional and non-traditional areas.
- Time be allocated during the planning stages of programs to research potential employment areas, including viable entrepreneurial activities which students could undertake.
- During programs for isolated rural women ongoing contact between participants be fostered to enable them to maintain their own supportive network.
- TAFE, as far as possible, bring its courses to rural students wherever they are, rather than expecting them to come to TAFE colleges.
- Research be undertaken into informal learning centres in which TAFE is involved and TAFE non-vocational courses to discover their effectiveness as bridges into employment or more formal education.
- All TAFE colleges ensure that a complete listing of their externally offered courses be available on a readily accessible data base.
- A women's access co-ordinator be appointed in each country region nationally, to facilitate rural women's access to TAFE.
- All TAFE curricula, as a precondition for accreditation or reaccreditation, be made gender inclusive and reflect women's and men's needs in both content and delivery.

- When courses are provided for rural communities, representatives of those communities participate in all significant decisions about the content, delivery , venue and (when appropriate) staffing of the program.

- Courses designed for isolated rural special access groups, or which have enrolled students from special access groups, be eligible for a special grant if this is needed to cover the cost of hiring transport for these students.

- Whenever programs are developed for isolated rural women, representatives from any specially disadvantaged groups in the community to be served participate in decision making and be consulted at all relevant stages of the programs' design, development and operation.

- A series of monographs be written to provide information for TAFE staff about the backgrounds and issues relevant to specific special groups and ways successful TAFE programs have approached these issues.

- Additional non-contact time for professional development, community liaison and support services be allocated to lecturers whose classes contain students from specially disadvantaged groups of isolated rural women.

- Special efforts, including designated funding, be made to encourage Aboriginal women to lecture in, and contribute to, every stage of courses run for rural Aboriginal women.

- Before any course for isolated Aboriginal women is developed the views of the potential students be sought and used as the basis for determining what is to be offered, how and by whom.

- Planning of courses designed for Aboriginal women include some means of ensuring that they are not isolated from their support group. Additional funding to be provided for this purpose.

- Module courses be developed for the certificates in health and child-care suitable for Aboriginal women to study under qualified supervision in their own communities.

- All TAFE courses provided for Aboriginal women be regularly monitored to ensure that they are responding effectively to the present and likely future needs of the community.

- Whenever non-Aboriginal TAFE teachers are to work with Aboriginal women they be given pre-service education about Aboriginal society and values. This should be designed to encourage them to be open to the different values and society in an Aboriginal community so that they can work with rather than for the women.

- When decisions are being made about the provision, location, staffing, curriculum or implementation of courses for Aboriginal women, Aboriginal women be active participants at all stages.

CONCLUSION

Clearly not every educational demand can be met. Priorities will have to be determined. Not only what is offered but how, when, where and by whom are key issues. One of the strongest messages that came from rural women all over Australia - from Aborigines, migrants, women on farms and in isolated communities is that they want community participation in decisions and processes at every relevant stage of the development of courses for which they are a target group. There is a need for clear pathways for participation by communities in this decision making.

For rural women to access tertiary education they must be able to identify with it, and have a sense of ownership of what is provided and how it is provided. This will require a two-way exchange of information, based upon respect for the many different life styles and values of rural women. While women's courses are under-resourced and their needs for appropriate teaching methods, curricula, child-care and time-tabling are largely unfulfilled it is not surprising that many rural women feel that their needs are not being met equitably.

One result of increased community participation would be to make programs more 'rural women friendly' - that is materials provided would be gender inclusive and use examples and role models relevant to rural women. It would also mean that from the very conception of the program, issues such as content, time-tabling and child-care would be planned according to the needs of the target group.

The full report on this project: *Overcoming distance: isolated rural women's access to TAFE nationally* is available from Nelson Wadsworth, PO Box 4725, Melbourne, Vic 3001.

WOMEN TECHNICIANS SELF - CONCEPT, PROBLEMS AND TRAINING NEEDS

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The idealism in Plato's statement that "sex is a difference which makes no difference" has been a central theme of womens movements. While much has been written and read, said and heard, to uplift womens plight, all these seem to be mere lip service considering the condition of women in training and employment in most countries today.

Traditional and organizational barriers do not only account for this status of women in society, but they ultimately affect their self concept as well. Subsequently, a womans self-concept would mitigate or enhance possibilities of her advancement. Women need to overcome these barriers and improve their self-concept in due time. G. A. Kelly, in his personal construct theory indicated that the construct pattern of a person is a vital factor in determining potential success/failure in any field of endeavor (Evans, 1987). It is with this idea in mind that this research was conceived.

THE STUDY AND ITS FRAMEWORK

This study, which was limited to 135 women (non-supervisory and supervisory positions) employed in technician related occupations from 6 countries in the Asia Pacific region in 1988, sought to find answers to three questions, namely:

1) What is the perceived level of self-concept of women technicians?

2) What personal and work related factors are associated with women technicians self-concept?

3) What are the problems and training needs of women technicians?

In this study, self - concept refers to a woman technician's perceived and attached value to herself as indicated by the aggregate mean of her perceived capability, aspiration and gender equality. It is further conceived that while self-concept is the output of a woman's life long interactions with her environment, it also serves as a vital input to her potential future.

To operationalize the above concept a questionnaire was developed, drawing item content from related literature and a similar opinionnaire used during a preliminary survey by the author. Sampling was gender and work specific - - only women employed in technician related activities like inspection and control, installation and operation, repair and maintenance, estimating and drawing, testing and measurement, collection and communication of information, trouble shooting, production planning, design, development and modification were classified as technicians. Descriptive and inferential tests were used to analyze the survey data.

FINDINGS

The profile of the non-supervisory sample is described as 29 years of age, single, with 6 years experience in the job, completed post secondary education and has attended one training course. She wants to keep her job, earns US$166.5/month, prefers a male supervisor, is not involved in business/community activity. If married, her husband prefers that she works to contribute to the family income.

Comparatively, the characteristic profile of the supervisory category is described as 38 years old, married, with 6 years of experience in the job, completed a 4-year course, and has attended 0-1 training course. She also wants to keep her job, earns a salary range of USD 72 (SLK) to 1,387 (Singapore), does not care about the sex of her immediate boss, and is involved in community activities. Her husband does not interfere with her decision to work.

On Self - Concept

In a scale of 1 (lowest) to 5, the level of self concept of women technicians in the non-supervisory ($X = 3.76$) and supervisory ($X = 3.81$) categories is average. While the supervisory category indicates a slightly higher measure the difference is not significant at $p < .05$.

An examination of mean values of the indicators shows a congruence of perceptions between the supervisory and non-supervisory groups in the first five highest values of their self-concept. Both believe that:

- women could do as much and as well as men if given the opportunity
- wives should be equally involved in making family decisions
- women should also be involved in politics business and other socio civic activities
- women have the capability of performing effectively homemakers and professional roles at the same time
- women should prepare themselves to take male dominated roles in science and technology

Similarly, the two groups also agree on their perceptions of equality in taking family responsibility, gender strength, and occupational opportunity.

Taking both supervisory and non-supervisory groups as one, correlates of perceived self concept were identified at $p < .05$, some of these findings are:

- perceived gender equality is likely to increase as the level of education (r.47) and number of training (r.25) increase.
- aspiration to achieve merit award is likely to increase as the level of education increases.

- age and experience tend to be negatively associated with most measures of self concept.
- salary increase tends to affect positively women technicians perceived concept of promotion (r.26), leadership (r.32) and occupational equality (r.35).

On Problems and Training Needs

The three most frequently indicated problems are unequal opportunity for training and promotion, interference of domestic responsibilities with employment demand, and inadequate work-related skills.

When training needs were ranked, women technicians in the non-supervisory positions placed training in work related skill, new and efficient methods of working, and concepts and principles involved in the nature of the job as their priority. The supervisory group indicated the same preference, adding systematic performance evaluation as their second priority.

DISCUSSION

Some interesting points could be drawn from the findings of this study.

The profile shows an inadequacy of training for women technicians. This is supported by their claim that training opportunity is distributed unequally, at the advantage of their male counterpart. If training tends to improve their self - concept as shown in this study, then policies related to training of women seem to need further reexamination.

Womens role as breadwinner is recognized by their husbands in both sample groups. A world survey in 1985 supported this, reporting that 1/4 of households are "de facto" headed by women who are the sole economic producers (Sivard, 1985, p.11).

The perceived level of self - concept of women technicians signifies a promising note. They believe they could perform traditionally male assigned responsibilities efficiently if given the chance both at home and at work. With home responsibilities interfering with their work demands, and their economic role gradually recognized, structural arrangements in their places of work as well as provisions to manage home-work interacting difficulties would enhance womens productivity.

Educational qualification recorded a significant association (r.47) with the concept of gender equality. This value must not be overlooked. Special empowering schemes to upgrade womens education needs added attention, and this would consequently affect their aspiration to perform better.

A quite alarming finding is indicated by the association of age and experience with most measures of self-concept. It appears that as women technicians age and experience increase their level of self - concept decreases. This could be brought about by the cummulative effect of experiences in gender inequality in the work place over the years.

Problems, training needs and self - concept are found to be functionally interrelated. As problems and training needs of women technicians are appropriately and sincerely attended to, self - concept would correspondingly improve. Simple palliative measure will do little to produce significant changes in women technicians participation in development if these are at odds with the ways in which they perceive and understand the world and their roles within it. Attempts to build self - confidence must begin with an exploration of an individual's perception of self, her relation with others and the world.

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WORKSHOP H

Theme: The ITATE papers: Modelling and applying techniques appropriate for effective adult teaching/learning.

Section 1: Framework for action

Tuesday March 14. 11.00 am.

Adelaide Room 2

Geoff Scott. *Reflective Learning at ITATE.*

Susan Knights. *Reflection and the Education of TAFE Teachers.*

THE ITATE PAPERS

AN INTRODUCTION TO THE ITATE PROGRAM PRESENTED AT THE INTERNATIONAL CONFERENCE RESEARCH AND DEVELOPMENT IN VOCATIONAL EDUCATION

INTRODUCTION

The Institute of Technical and Adult Teacher Education (ITATE) situated in the Haymarket area of Sydney has a major role in the vocational education of adults in New South Wales. ITATE conducts courses for teachers and trainers working in formal and non-formal situations. Students include full-time TAFE teachers, adult community educators, Aboriginal adult educators, teachers for speakers of languages other than English (TESOL) and adult basic education, and trainers in industry and the public sector.

Significant changes in practice have occurred in many of these areas over the past few years and this series of papers by ITATE staff identifies and critiques some of these changes.

THE FRAMEWORK FOR PRACTICE

The increasing awareness of adult learning principles underpins the development and implementation of relevant programs to meet the specific needs of ITATE's clients in vocational education. At ITATE, our students are all adults and most of them are working with adults in formal and informal teaching situations. Modelling and applying techniques appropriate for adults are effective teaching/learning strategies and more likely to be directly transferable to the students' work environment.

STRUCTURE OF THE ITATE PAPERS

These papers are divided into four sections, each section preceded by a brief descriptive overview.

The four sections are :

Framework for Action
Innovative Practices
Research and Evaluation into Innovations
Future Directions

The **Framework for Action** provides a rationale for the adult learning principles applied at ITATE and the application of recent thinking and research in these areas.

The section on **Innovative Practices** highlights a number of teaching and learning approaches currently being implemented. These include :

- activities which rely more on experiential learning and reflection techniques,
- emphasis on communicative and cooperative learning,
- negotiating programs to meet students' needs for both groups and individuals,
- self-directive and contract based learning and
- developing critical thinking and self-appraisal skills

The third section discusses the development of a coherent **Research and Evaluation** program. New or emerging organisational structures and teaching/learning techniques are being investigated using both qualitative and/or quantitative research designs, reflecting ITATE's commitment to research the effectiveness of its innovations. This section reports recent research and evaluation at ITATE. They include evaluation of programs and critiques of some innovative practices including reflection activities using a journal, self-directive and contract learning.

The final section identifies some areas of concern and development which have implications for **Future Directions**. The developing role of the vocational educator as teacher, scholar and researcher in the light of changing organisational and political structures is analysed and suggestions for appropriate action are provided.

Discussion on issues arising from these papers and experiential activities illustrating the application of innovative practices in adult education programs are incorporated in the ITATE presentations at the conference.

SECTION 1 - FRAMEWORK FOR ACTION

This section consists of an overview which provides a rationale for reflective learning. Scott argues the need for a reframing of adult vocational education to enable it to equip teachers to cope with a changing social political and economic environment. The framework he suggests is a reflective experiential one which concentrates on improving professional practice and harnessing theory in this endeavour.

All teachers, Scott claims, need to be aware of various types of learning and how each is appropriate in certain circumstances. The way to increase this awareness is through 'coaching' in the arts of reflection experiential learning and self direction.

Susan Knights sets reflective learning in its recent histroical context and examines both the advantages and difficulties of implementing this process in TAFE teacher education. Knights discusses the process of reflective learning and suggests reasons for its incorporation as a means of dealing effectively with new situations. Extending our experience and options by critical reflection is seen as especially appropriate in vocational education.

The papers which follow this section more or less share this broad perspective and examine how to achieve the aim of producing self directed reflective, flexible practitioners, some of the problems in doing so and investigate ways in which vocational teacher education should do more in these areas in the future.

REFLECTIVE LEARNING AT ITATE

GEOFF SCOTT

BACKGROUND

Adult Vocational Education (AVE) exists in a turbulent technological, economic, demographic, social and political environment. AVE staff must effectively be able to manage constant change in the nature of their students, subject content, teaching methodology, program content, organizational administrative structures and procedures, funding parameters and so on. Recognition of this need is increasingly being given in the reaccreditation process in AVE teacher education.

For example, the Interim Review Committee for the Diploma of Teaching at ITATE in 1988 asked:

"How will the program enable (teacher education) students to understand and accept their role as agents of change?" (Interim Review, 1988: (v))

Overseas the recognition of this need has been reflected in the reframing of AVE teacher education as a career long (not front on) process and the current emphasis on teachers having to be "aggressive self-directed learners" in order to manage career long change (Scott 1988: 9). Effective change management is seen to involve a continuous adult learning (and unlearning) process. How successful this learning is depends not just on the individual but the climate and culture of the organization and the local unit in which the individual works (Crandall et al. 1986, Fullan and Connelly 1987: 55.1).

A supportive organizational culture, climate and structure is vital because it now appears that much of our significant learning in professions occurs not at formal professional development activities but informally, on-the-job (Schön 1983, 1987). Such learning occurs as we confront the dilemmas of real life practice, on a daily level. It often is supported by seeing skilled colleagues in action, and by informal discussions with such people.

Teacher education has been slow to take account of such issues. At ITATE over the past five years we have been experimenting with a new way of delivering teacher education which tries to do this. We have been trying to bridge the gap between theory and practice, between academic and practical knowledge. We have increasingly studied the work of people who have been involved with experiential and self-directed learning and those interested in the influence of context on learning, people like Kolb (1976, 1984), Schön (1983, 1987), Boud et al. (1985), Hunt (1987). We have become particularly interested in supporting reflective learning in the practice context.

We have experimented with new approaches and techniques. At the same time we have attempted to refine our understanding of how these fit into the broader picture of teacher learning in AVE, to make sense of our experiments.

In our session we will share this emerging framework (meaning making scheme) and seek to model some of our developing repertoire of reflective learning approaches. We certainly don't pretend that these are the best way to tackle the above change management needs. We do believe, however, that they represent a response well worth further development. We share our discoveries - not in the hope that you would do as we have done - only that you might be encouraged to reflect on your own experience as teacher educators, that we might trigger your own thinking and experimentation in the area.

REFLECTIVE LEARNING FRAMEWORK

It was John Dewey in 1933, and more recently, David Kolb (1976, 1984) and Donald Schön who have focussed attention on how successful professionals approach and handle the dilemmas of daily practice in a turbulent environment. They have found that most professional training programs operate under a set of "technical-rational" assumptions which bear little relationship to the way professional practice operates.

In the practice context things are complex, murky. The unexpected is ever present. We are constantly faced with dilemmas, with strongly felt problems the causes of which are unclear, hidden. Yet in traditional training programs influenced by the "technical-rational" epistemology of practice (Schön, 1983) such problems are assumed to be clear, self-evident and context-free. It is assumed that they are amenable to the application of set procedures, typically derived from objective, carefully controlled scientific research.

People like Schön have found that the most successful professionals have learnt to be reflective practitioners, people who recognize that each situation is unique, that practice is ambiguous and uncertain, people whose learning starts with a practically experienced dilemma and whose learning ends with action to resolve that dilemma. Here theory and practice are interlocked, here one's stance towards practice and capacity to think like a detective becomes vital. This sort of learning contrasts sharply with more traditional, academic learning.

To try to sort out this distinction between types of learning we have been helped by the work of Jack Mezirow (1978, 1979, 1981, 1984, 1985, a, b, and c). Mezirow has been strongly influenced by Jorgen Habemas (1971) and the Frankfurt School which has tried to bring together the ideas of Marx and Freud.

Mezirow reminds us that no one type of learning suits all contexts subjects, groups of learners. He notes that much of the problem in learning programs is our failure to match the most appropriate learning approach to the unique context under consideration. Part of the problem of professional training in AVE is that a technical rational learning approach, eminently suited to some contexts, is not suited to all aspects of teacher learning.

Mezirow (1985a-c) distinguishes between Instrumental (or Technical-Rational) Learning, Dialogic (or Practical/Interpretative) Learning and Self-Reflective (or self-critical/emancipatory) Learning. Each type of learning is uniquely suited to different aspects of social existence and each has a quite different learning focus. As a consequence, each requires quite different ways of constructing knowledge, implies different investigative (research) techniques, different methods for verifying (checking) discoveries and quite different approaches to the organization and support of learning. This is illustrated in Table 1.

Keeping the 3 types of learning outlined in Table 1 in mind is very important. It can help us surface the different assumptions various AVE teacher education staff unconsciously have about the nature of learning and what must be done to support it. It can help us decide when instrumental learning approaches are appropriate (e..g. in teaching a set, fixed procedure like changing a tire on a car); it can indicate when dialogic or self-reflective approaches are more appropriate (e.g. in considering our stance towards our students, our approach to negotiation with colleagues, how we handle situations where things go wrong, how we manage our on-the-job and career long learning).

We hasten to add that Mezirow's is only one way to distinguish between types of professional learning[2]. Mezirow has been most useful because he directly explains why the instrumental learning approaches so typical of many teacher education programs seen unable to account for the reality of a work context which is ambiguous, unpredictable, in which complex human interaction and unsurfaced assumptions and interpretations are the norm.

So, in our view, a key problem in AVE teacher education is that one conception of learning (which has become popular with the rise of Social Darwinism and scientific management over the last century) has been inappropriately generalized to all teacher learning situations. Consequently we have not abandoned instrumental approaches. We use these when the issue justifies it. But we also have sought to expand our less well developed repertoire of dialogic and reflective learning approaches in situations where instrumental learning is of little help. This is the area of our major experimentation. It is this sort of learning that best meets the currently identified need for teachers who are effective agents of change and aggressive self-directed learners.

Our students see the relevance of reflective and dialogic learning but consistently report that they are quite unused to doing it. They report school and previous educational experiences having mainly focused on instrumental learning. They want coaching (Joyce and Showers, 1982) in the arts of reflective, experiential and self-directed learning.

It is here that Mezirow's work overlaps with the experiential, self-directed and reflective learning theorists (see Brookfield, 1985; Schön, 1983, 1987; Hunt, 1987; Kolb, 1984; Boud et al., 1985). Just as we have sought to get a more universal picture of types of learning, we have also sought to see how the work of the reflective, experiential and self-directed leaning theorists fits together. This is depicted as a number of interlocked cycles of reflection and dialogic learning in Figure 1[3]. The total framework constitutes our definition of reflective learning in the AVE teacher education context.

TABLE I.

DOMAINS OF LEARNING.

LEARNING DOMAIN	ASPECTS OF SOCIAL EXISTENCE INVOLVED	FOCUS OF LEARNING	WAYS OF CONSTRUCTING KNOWLEDGE	EXAMPLES	ASSOCIATED RESEARCH TECHNIQUES	METHODS FOR VERIFICATION OF KNOWLEDGE CLAIMS	ASSOCIATED LEARNING APPROACHES/CONDITIONS
INSTRUMENTAL (Technical)	"Work"	Control and manipulation of one's environment through instrumental action Focus: competency development, how to do things, problem-solving. Concerned with observable facts, behaviour & performance change	Empirical (Tech'l-Rational)approaches. e.g use of prediction hypothetico-deductive paradigms. Focus: observable social or physical situations or events; active experiment, problem solving, classification of objects/events into independent & dependent variables; search for regularities & causal relationships Knowl. is prescriptive	Mathematics, sport Technical learning Skill performance.	Technical-Rational/positivist approaches. Use of experimental inquiry; focussed on manipulation / observation of variables under 'controlled' conditions.	Observation (or reports on)the results of 'interventions' in practice. Search for the 'best' technique, the definitive answer, the approach that 'works' Success=control achieved/hypothesis is not disconfirmed.	Variety of instrumental & behaviour modification techniques: coaching, skill training, programmed learning, competency-development, self-paced learning, computer assisted instruction
DIALOGIC (Practical)	Interaction	Working out what others mean as they communicate with us Focus: nature of meaning, improved mutual understanding & clarification of the conditions for communication & intersubjectivity.	Hermeneutic/phenomenological approaches & use of techniques of 'discourse' & symbolic interaction. Focus: search for consensual meaning & discovery of how we create meaning & problem construct. Knowl. produced is designative not prescriptive. It is concerned with insight not cause & effect. It is focussed on the unobservable/unmanipulable. Inference is abductive not deductive.	Human-relation's subjects; study of meaning-giving, motives, values, philosophies, subjectivity & different perceptions Participation in discourse and discourse analysis	Grounded theory Phenomenology 'discourse' techniques.	Consensual validation thru discourse (Mezirow, 1985b) to test the validity of meaning. Success=agreed shared meaning. Meaning is seen as relative not absolute. Rules of hermeneutics may guide the methods of verification.	Symbolic interaction techniques. Use of discourse approaches, role-taking techniques, development of metaphors.
SELF REFLECTIVE (Emancipatory)	Power	Surfacing & appraising how our world-view(meaning giving perspective) influences our perceptions of life&actions thru critical self-reflection. Focus: identify / critique nature / sources of our meaning schemes & transform them as necessary. The goal is increased autonomy control & power over one's life.	Identification of distorting psychological & cultural assumptions which shape our meaning giving schemes. Use of tech's of critical theory & psychoanalysis. Knowledge produced is appraisive of one's personal meaning schemes/perspective.	Examination of how we handle the existential dilemmas of adult life, development and work. This can be gradual or epochal.	Ethnomethodological technique of 'breaching'.	Development of a more satisfactory meaning scheme or perspective. 'Only the individual can determine the validity of the re-organsied meaning perspecive' (Mezirow, 1985a:21). Movement is from a non-reflective to a critically reflective stance. The test is coherence in that the transformed perspective better accounts for, guides & facilitates control of experience.	Techniques of psycho-education(Mezirow, 1985a), ideology critique. Use of the socratic method, co-counselling(Heron 1973), techniques of Hunt(1987), Freire (1970). Use of reflective learning cycle (Scott, 1987a).

(Sources Mezirow 1985a-c; Boud & Griffin (1987) Habermas (1971))

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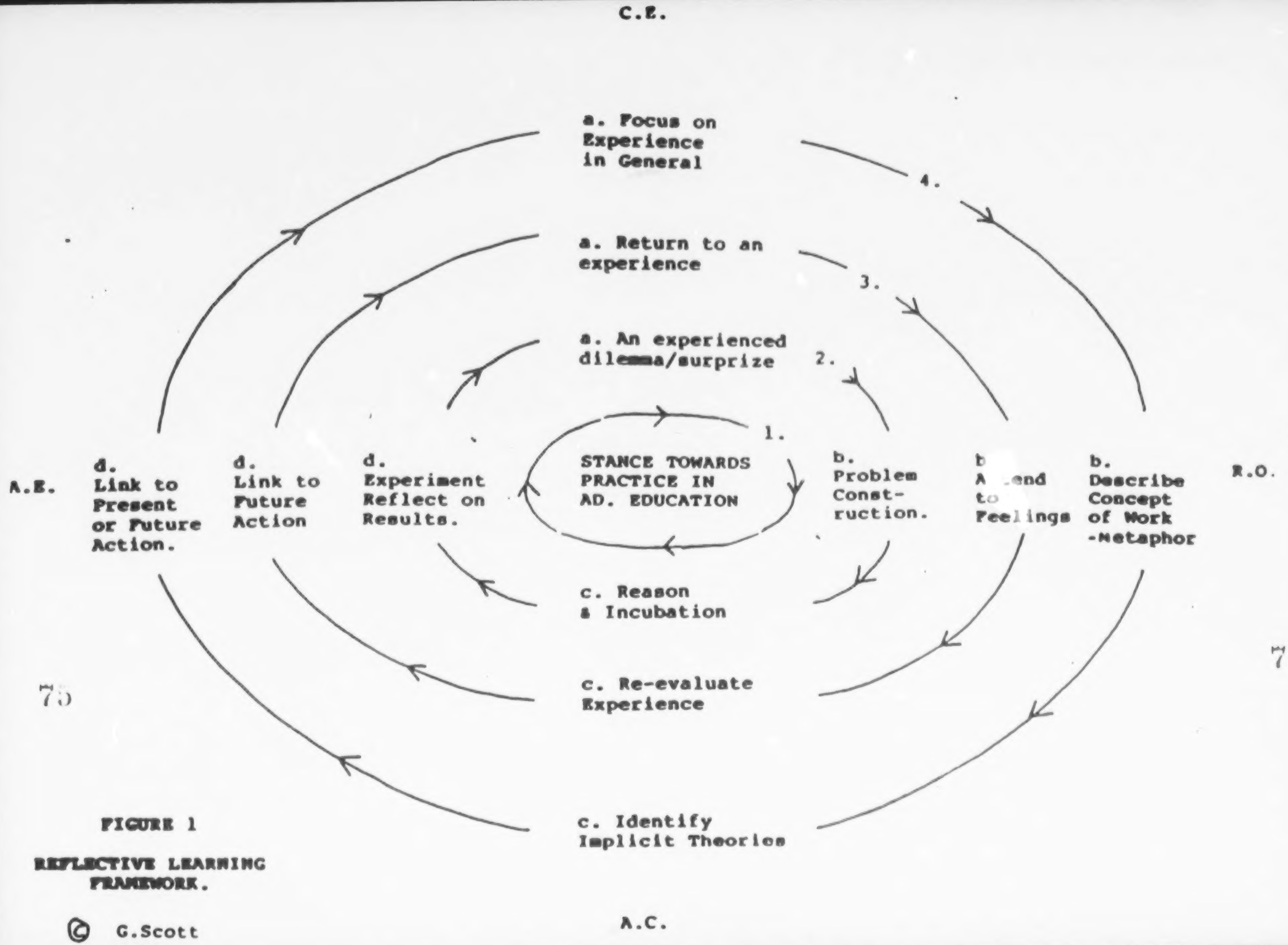
C.E.
a. Focus on Experience in General
4.
a. Return to an experience
3.
a. An experienced dilemma/surprize
2.
1.
STANCE TOWARDS PRACTICE IN AD. EDUCATION
A.E.
d. Link to Present or Future Action.
d. Link to Future Action
d. Experiment Reflect on Results.
b. Problem Construction.
b. Attend to Feelings
b. Describe Concept of Work -Metaphor
R.O.
c. Reason & Incubation
c. Re-evaluate Experience
c. Identify Implicit Theories
A.C.

FIGURE 1

REFLECTIVE LEARNING FRAMEWORK.

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What we believe drives the reflective, career long self-directed learning of the effective AVE teacher/charge manager is a particular sort of stance towards framing one's relationship to practice. This is depicted as Layer 1 at the heart of Figure 1. In our view one's stance is comprised of ones values, what Mezirow (1985) calls our "meaning making schemes". We believe that there is no objective meaning attributable to any particular teaching situation, that, instead, the meaning of that reality is constructed using our individual meaning making schemes. Therefore we acknowledge that the meaning of the same situation may be interpreted quite differently by different people because of this. Schön (1983), along with Dewey (1933) has attempted to describe the stance of the reflective practitioner. The following attributes are emphasized:

- A willingness to treat each situation as a unique case.
- Open-mindedness, willingness to listen to feedback and to disconfirming and contradictory points of view.
- A desire to face up to and learn from one's errors.
- A willingness to experiment, take (sensible) risks.
- A desire to work in an equal relationship with clients, to work in collaboration with clients and avoid the use of status and power as a form of control.
- A capacity to make a decision and take responsibility for the consequences of one's actions.
- A capacity to suspend judgement.

Schön (1983) has noted that such a stance is often discouraged in the culture of educational organizations and in teacher education programs based solely on a technical-rational epistemology of practice. This is because, he asserts, such places encourage notions that the expert knows best, that there is one certain, universal answer to problems of practice, that objectivity and certainty are important.

A type of reflective thinking and learning particularly emphasized by Schön (1983, 1987) is Reflection-in-Action. This is depicted in layer 2 of Figure 1. He distinguishes reflection-in-action from the more tacit "knowing in action" which practitioners demonstrate. Whereas knowing in action is almost intuitive, reflection in action is more conscious and always starts with a dilemma/surprise, a trigger or a need to do something because things aren't going as predicted, because knowing in action is no longer working. In response to this experiential dilemma the effective practitioner moves into an attempt to work out what the problem really is, to problem construct, to give meaning to the situation. This problem construction requires not just the stance outlined in layer 1 but a repertoire of patterns/exemplars from previous experience with which to make sense of the situation. This process typically requires "incubation" as well as conscious reasoning. Often an interpretation of the situation comes, the pieces fall together. Simultaneously an action is implied. The action is carried out and its results evaluated. The process is not so much a sequence as a "dialogue" with the practice situation. Reflection in Action can be immediate or can extend over quite lengthy periods.

The Reflective Practitioner according to Boud et al. (1985) also takes time out to (formally and informally) Reflect on Experience and to reflect on an episode of reflection in action. This is seen to be a vital step in the reflective learning process because it is this assessment of the experience's net worth (Dewey 1933: 267) which cements what has been learnt. Experience alone does not constitute experiential learning. Reflection on experience develops the (often unconscious) repertoire of exemplars/patterns/meaning making schemes which enable the experienced reflective practitioner to engage in reflection in action when future dilemmas arise. These patterns enable the practitioner to see a new situation as having some but never all, the elements of an old one and consequently to suggest some elements of what might be done to resolve it.

In the cycle of reflection on experience the adult educator consciously returns to an experience by first specifically attending to the feelings aroused by it. This can be helped by the use of photographs, journals, video recordings, discussion with participants, learning partnerships (Robinson et al., 1985). The practitioner then seeks to re-evaluate the experience, to determine its net worth, to see how it relates to the experiences of others, to wider reading and so on. This making sense of experience according to Boud et al. (1985, Ch. 1) involves the use of association, integration, validation and appropriation. This increases the likelihood that what is experienced and learnt will be used in future situations of a similar nature.

In Layer 4 of Figure 1 the thinking of Hunt (1987) is depicted. He has developed a cluster of self-reflective learning experiences which help educators to surface and make sense of their implicit "theories in use", the theories and assumptions implied in what they do, how they treat people situations, their approach to work in general. He proposes the use of metaphor to develop a practical language for educators to communicate their experiences and to critique their themes in use.

Again he finishes the cycle with the practitioner's clarification of what might need to be done differently in practice. His work is similar to Mezirow's notion of critical self-reflection.

All of the work reviewed so far shows a common pattern identified as an experiential learning cycle by Kolb (1976, 1984). What unites these interlocked cycles of reflection is the fact that they all start with concrete experience (CE), involve reflection on that experience (RO), on attempt to make sense of what has happened (AC) and then to link this to practical action. and experimentation (AE). Kolb's four poles of this experiential learning cycle are noted at the ends of the axes in Figure 1.

SUMMARY

Adult Vocational Education is seen as existing in a turbulent environment. Successful teachers are best conceived of as effective managers and agents of change, capable of aggressive self-directed and reflective learning.

This form of learning is distinguished from instrumental (technical-rational) learning using a framework developed from the work of Mezirow. A reflective approach to learning is seen as requiring a specific set of teacher education approaches guided by a reflective learning framework. This framework successfully accommodates the thinking of major reflective, self-directed and experiential learning theorists.

It is this emerging conception of reflective, dialogic and experiential learning which will be discussed and modelled at the conference.

NOTES

1. A number of studies (e.g. Wideen and Hopkins, 1983 and Crandall et al., 1986) have consistently found that the dominant culture in educational organizations and teacher education institutions, especially the norms of isolation, individualism and the mominance of a technical rational view of teaching practice, acts against the aggressive self-direction, openness and experientation necessary for teachers to survive in the turbulent environment of daily practice.

2. Tennant (see Scott, 1985: 14) for example, distinguishes between a focus on the person or the social environment as the point of departure for explaining adult learning theories.

3. This framework is discussed in detail in Scott, 1987.

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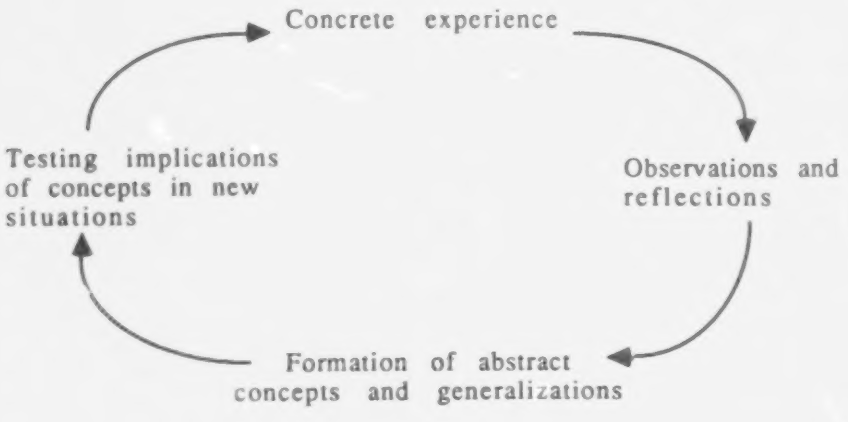
REFLECTION AND THE EDUCATION OF TAFE TEACHERS

SUSAN KNIGHTS

The idea of reflection as a significant element in learning and professional practice is one which has received increasing attention from educators during the 1980's. Several writers and researchers have discussed the importance of reflection in the professional development of school teachers (for example Zeichner and Liston, 1987 and Korthagen 1988) and it seems reasonable, therefore, to ask whether it might be equally important in the education of TAFE teachers. First of all it is necessary to explore what is meant by reflection in relation to learning and professional practice.

Although John Dewey made a significant distinction between reflective and routine action in his 1933 book, How We Think, his discussion seems to have made little impact on the literature on teacher education until relatively recently. Dewey defined reflective action as the active and persistent consideration of any belief in the light of the grounds that support it and the consequences to which it leads, and contrasted this with routine action which is guided primarily by tradition, external authority and circumstance (Zeichner and Liston, 1987 p24). Far more familiar to educators in the 1980's is reflection as it occurs in David Kolb's learning cycle, where it appears as a second stage following on from concrete experience and leading to the formation of abstract concepts and generalisations.


Concrete experience
Observations and reflections
Formation of abstract concepts and generalizations
Testing implications of concepts in new situations

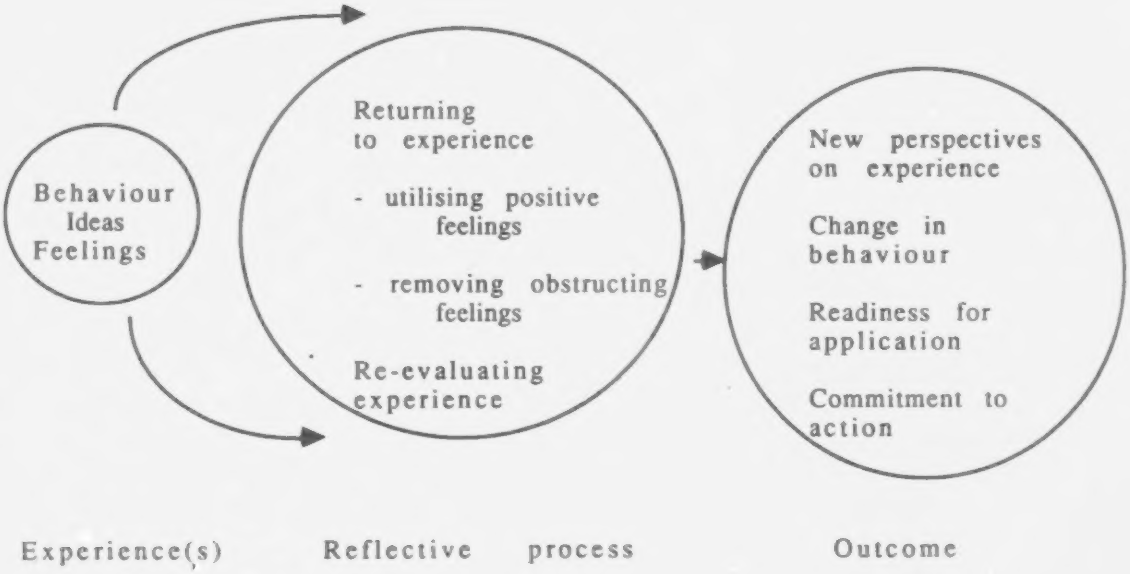
The Lewinian Experiential Learning Model Kolb 1984

Although reflection obviously plays an important part in Kolb's model of the learning process he does not discuss it in detail. Kolb's model has been important in helping to understand and improve the practice of experiential learning but it has not increased understanding the dynamics of reflection or ways in which it might be promoted.

In a book whose title includes a useful definition of reflection, Reflection: turning experience into learning, Boud, Keogh and Walker offer a model which attempts to describe the stages of the reflection process
The model has three stages :

1. returning to experience (what happened?)
2. acknowledging and dealing with feelings (how do I feel?)
3. thinking through the implications (what does it mean?)

The process of reflection Boud et al
1985 p36


Behaviour
Ideas
Feelings
Returning to experience
- utilising positive feelings
- removing obstructing feelings
Re-evaluating experience
New perspectives on experience
Change in behaviour
Readiness for application
Commitment to action
Experience(s)
Reflective process
Outcome

Although, as the authors point out, the process of reflection is not as clear cut in practice, such a description is useful in clarifying what is meant by reflection in relating to learning. It is a focussed activity involving deliberately turning attention to specific events, experiences or ideas and trying to assess their implications. It may have a variety of outcomes such as new perspectives on experience or commitment to action but does not necessarily involve a change of perspective.

Peter Jarvis, in discussing the place of reflection in the process of learning gives the following description which, like the Boud, Keogh and Walker model, sees reflection as both backward and forward looking,

> "Reflection, in this context, means a process of deep thought both a looking backwards to the situation being pondered upon and a projecting forward to the future, being a process both of recall and of reasoning." (Jarvis, 1987 p87)

Jarvis points out that the outcomes of reflection are to a great extent socially constrained,

> "there is a propensity, in many people, to accept the ideas with which they are provided rather than to question them." (Jarvis, 1987 p11)

The particular form of reflection which is undertaken with the intention of contradicting this propensity to accept given ideas is termed "critical reflection". Stephen Brookfield describes this in the following terms,

> "calling into question the assumptions underlying our customary habitual ways of thinking and acting and then being ready to think and act differently on the basis of this critical questioning." (Brookfield, 1987 p1)

This description comes from his book, Developing Critical Thinkers, in which he describes the process of critical thinking in stages which have parallels in the Boud, Keogh and Walker reflection model but extend to acting on the new ideas that have emerged from critical thinking. (Brookfield 1987 p25-29).

The idea of reflection as a critical activity is a strong thread running through much of the literature relating to reflection and learning. It can be identified in Freire's description of problem-posing education (Freire 1972), in Mezirow's concept of perspective transformation (Mezirow 1977) and in Habermas' domain of emancipatory learning (Habermas, 1979). In Australia it has been most clearly delineated in relation to school teaching by Stephen Kemmis, John Smyth and their colleagues at Deakin University. (Kemmis in Boud et al 1985, Smyth 1987).

So far reflection has been identified as an integral part of the learning cycle, as a deliberate process undertaken in order to "turn experience into learning" and as a critical activity which calls into question the assumptions underlying habitual ways of thinking and acting. The work of Donald Schön adds another dimension to the concept of reflection. Schön's view is based on his research into the way professionals of different kinds act in practice. He challenges the assumption that professional practice involves only the application of relevant technical knowledge to clearly defined problems.

> "the situations of practice are not problems to be solved but problematic situations characterised by uncertainty, disorder and indeterminacy." (Schön, 1983 P50)

In order to make sense of these problematic situations practitioners use a process Schön calls reflection-in-action.

> "Stimulated by surprise, they turn thought back on action and on the knowing which is implicit in action ..... it is this entire process of reflection-in-action which is central to the "art" by which practitioners sometimes deal well with situations of uncertainty instability, uniqueness and value conflict." (Schön, 1983 p50)

This concept of professional practice has challenging implications for the professional preparation of practitioners, (including TAFE teachers). They need not only to learn a body of knowledge but also to reflect on the application of that knowledge in practice.

> "New knowledge is established in the learning situation when practitioners bring their knowledge to the situation and reflect upon their experience of the situation." (Jarvis, 1987 p96)

Thus the real basis for professional practice becomes the practitioner's personal guiding theory, based on reflection on the outcomes of attempts to apply professional knowledge in different situations.

If we accept the preceding definitions of reflection and its importance for professional practice then it is clearly relevant to the professional practice of TAFE teachers. Like other educators they practise in a situation of increasing uncertainty and there is no way that either their teacher education programs or their previous professional experience can supply them with all the answers they will need in the years to come. The ability to reflect on the implications of situations in which they find themselves, to choose appropriate strategies and to continually re-evaluate and re-formulate the approaches they will use will certainly be as important as the more traditional aspects of pedagogical expertise.

In a paper discussing a possible basis for the reform of teacher education in the United States, Lee Schulman proposes a model of pedagogical reasoning and action based on extensive observation of new and experienced teachers. (Schulman, 1987, p18). The model begins with comprehension of subject matter, moves on to the transformation of subject matter into a design for instruction, then to the instruction itself, then to evaluation, then reflection and finally new comprehensions. Schulman's description of what happens during the reflection phase is as follows:

> "This is what a teacher does when he or she looks back at the teaching and learning that has occurred, and reconstructs, re-enacts and recaptures the events, the emotions, and the accomplishments. It is that set of processes through which a professional learns from experience. It can be done alone or in concert, with the help of recording devices or solely through memory ..... Central to this process will be a review of the teaching in comparison to the ends that were sought." (Schulman, 1987 p19)

Traditionally teacher education (including TAFE teacher education) has concentrated on the first four stages of Schulman's model, subject matter, instructional design, practical teaching and evaluation. The inclusion of reflection and new comprehensions implies a need for changes in the design of teacher education. Schulman supports Fenstermacher (1978, 1986) in his contention that,

> "The goal of teacher education is not to indoctrinate or train teachers to behave in prescribed ways, but to educate teachers to reason soundly about their teaching as well as to perform skillfully." (Schulman 1987, P13)

Schulman does not suggest how this might be achieved but in another paper in the same edition of the Harvard Educational Review Zeichner and Liston describe an elementary teacher education program at the University of Wisconsin which aims to engender the habit of critical reflection in its students. The paper not only describes the rationale for including reflection in teacher education but describes various methods used to encourage a reflective approach. These include diaries, classroom observations (by students) and action research projects. Further ideas about methods of encouraging reflection are found in the Boud, Keogh and Walker book which includes chapters on the use of diaries, one-to-one conversation and even computer assisted reflection.

Reflection can be an emotionally challenging activity as well as an intellectual one (Boud et al 1985, Brookfield 1987) and the idea of reflection as an important aspect of teaching is not always easy for new teachers to accept. Zeichner and Liston (1987, p11) describe the difficulties encountered in trying to overcome,

> "the still prevalent attitude among student teachers that time spent on inquiry and reflection is time taken away from the more important tasks of demonstrating knowledge and skills."

A report on a mathematics teacher education program in the Netherlands which operates on the basis of developing a reflective approach indicates that some students had difficulty in operating reflectively and that this may relate to their preferred learning style. The author suggests that students not naturally inclined to be reflective need a great deal of support in the initial stages of a course organised around a reflective approach. (Korthagen, 1988 p48)

It is clear that, however valuable an idea, there is no simple recipe for successfully incorporating reflection into a teacher education curriculum. Perhaps, in TAFE teacher education we have an advantage since our students are mature adults with far more experience of the complexities of the world than the school-leavers who still form the majority of school teacher education students. Most of our students have initiated significant changes in their lives in order to become TAFE teachers and this might be seen as a hopeful sign of openness to self-examination and reflection. Alternatively some will see that TAFE teachers's life experiences simply make them more dogmatic and less open to questioning! What is certain is that those of us who are involved in the education of TAFE teachers and see reflection as an important part of their learning and practice need to model a reflective approach in relation to our practice as educators, continually questioning our own assumptions, honestly examining the outcomes of our efforts and resisting temptations to return to routine action guided primarily by tradition, external authority and circumstance.

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WORKSHOP J

Theme: Vocational Education, Technology and Society.

Tuesday March 14. 11.00 am; Friday March 17. 11.00 am.

Adelaide Room 3

Professor S. Waks. S. Neaman Institute for Advanced Studies in Science and Technology, Israel. *Vocational, Science, Technological and Engineering-technology Education - Research and development aspects.*

Dr. Paul Hager. Senior Lecturer, Institute of Technical and Adult Teacher Education, Sydney College of Advanced Education. *Vocational Education/General Education - A false dichotomy.*

Colin Ball. Consultant to the Centre for Educational Research and Innovation, Organisation for Economic Co-operation and Development. Paris. *Towards an Enterprising Culture: Education for an active society.*

VOCATIONAL, SCIENCE, TECHNOLOGICAL AND ENGINEERING-TECHNOLOGY EDUCATION - RESEARCH AND DEVELOPMENT ASPECTS

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Vocational Education - Changing Faces

One of the most ancient forms of education is actually ***vocational training***, dating back to prehistoric periods adolescents learnt the skills of hunting, food-raising and housework, mainly by ***imitating*** their elders. With the emerging of technical trades, however, mere imitation could no longer be relied upon, so it was replaced by apprenticeship.

Progress in industry and technology intensified further the need for systematic training of manpower. This led to the appearance of specialised facilities and institutions such as vocational schools and technical colleges.

In the earlier days of vocational education the principal objective was aquisition of a trade, and emphasis was accordingly on fostering of manual dexterity and mechanical aptitude. Developments in science and technology, with their effect on all facets of life, have brought the inclusion of theoretical disciplines in the curriculum of vocational schools. Simultineously, these developments have narrowed the gap between vocational training and science education. This process is still taking place continuously even in the late eighties.

Science Education - Basic Part of Human Culture

In science education emphasis is mainly put on orderly thinking and on improved ability to analyse and understand physical, chemical and biological phenomena. Many scientists and educators advocate the inclusion of science in the precollege curriculum, so it would become a part of the educated adult. Opponents to this approach (Shamos, 1988), claim that requiring science courses of everyone during the formal schooling years, will not produce a scientifically literate society. It is an unrealistic, too demanding criterion to expect overall understanding of science by an average layman. The problem lies within one of the intrinsic properties of science that makes it very difficult to master, namely its *cumulative nature*. The resultant accumulation of knowledge is being open to continuous reexamination and critique. *Progress* is a characterising factor of science. Now a days, at least fourty thousand journals which present about one million scientific papers, are published annually (Shamos 1988).

An approach for instilling *science literacy* in pupils has been suggested by Hirsch (1987), a professor of English, who published a list of several thousand terms which a thinking citizen should be familiar with. This technique of gaining literacy by acquiring a large glossary of scientific terms, perhaps by rote, or even by recalling a brief definition of each, arises serious doubts among science educators. There is a need for basic understanding of the *functionality* that is caused by the manipulation and interrelationship of the various natural factors and phenomena such as energy, force, acceleration, field (gravity, electric, magnetic), chemical process or any biophenomenon. Not to mention the role of mathematics as the language by which nature is analysed, through observations, in a symbolic form, manipulated on the basis of logical rules which result in creating new knowledge about the universe and arrive to conclusions which lead to the real world, in the form of engineering and/or technology.

So far, vocational and science education have been discussed briefly. Penetration of technology into daily life of most people living on planet earth, has caused a narrowing of the gap between vocational and science education. As a result, ***technological education*** emerged as a combination of the two, requiring the fostering of both cognitive and instrumental literacy of any regular citizen.

Technological Education - Synthesis of Vocational and Science Education

There is much more of variety and comprehensiveness in the term ***Technology*** than can be conveyed by a single definition. Therefore, it is not surprising that such a definition is hard to find in literature. Many agree that technology is not merely the "appliance of science", so in addition to even a broader (yet one-sentence) description, such as "Technology is a disciplined process of using scientific, human and material resources to achieve human purposes" (Ditchfield and Stewart, 1987), some characterising features relevant to technology are listed. These features may include details such as: applying human multidisciplinary knowledge; skills and techniques in the activity of practical problem solving; production of an artifact, system or process that might affect people in any aspect of human life.In any case, we look at technology as a ***social human-related phenomen***on - evidently not an isolated science-technical process.

The necessity of any modern society to rely on technology may be one of the reasons for the evolving movement, in many countries during recent years, towards the inclusion of technology in the general education curriculum. This kind of technology education should strive to instill in the pupil ***technology literacy***. This literacy should consist of a comprehensive balanced blend of science-technical knowledge, contexts, processes and human values. In this regard, the sciences should be the resource of work on on technology, whilst the purpose is to educate cultural people who can ***use technology in responsible and human-value based manners.*** This is one facet of technology education, aiming at instilling technology literacy in all pupils, as potential non-professional everyday users of technology. Another facet of technological education is concerned with occupational oriented goals. It deals with the education of professional workers with aspirations towards personal development in techno-practical expertise areas in the various economic branches - industry as well as services. This kind of technological education replaces substantially the older forms of vocational education, which were mainly motor skill focused (robots carry out many of these skills), by integrating more and more mental or cognitive ingredients. Here we have the synthesis of science education with vocational training.

This type of technological education is being implemented in Israel for several decades on high school populations. Above 50% of the total high school students are enrolled in the technological trend. In many countries, the traditional vocational education students are considered to come from the lower achievers, compared to the pupils of the academic trend. With the emergence of technological education, the cognitive requirements from these students have raised, and in many cases they reach the academic standards required to pass matriculation examinations and proceed with tertiary education.

The crucial point behind these developments is that technological education (the professional oriented) should be considered and recognised as another route of secondary and even post high school education, rather than a lower-level one, compared to the theoretical-academic route. This parallel technological route of education should strive to attract students with high technical intelligence and open, for those among them who are capable and interested, ways for professional advancement and excellence (promotion track), not less valued by society than the pure theoretical academic careers do. Special attention, in such a technological-oriented curriculum, must be given to appropriate balance with human needs, emphasising awareness, perception and responsible value judgement.

While vocational education aims at training skilled laborers for a predetermined specific occupation, the purpose of technological education is to provide broad science based technical knowledge for enabling the student to adjust more readily to the changing occupational circumstances in the modern technological world. Special care has to be taken by the curriculum decision makers not to lock the prospective student within dead end routes thus blocking his future development. The option for further education (engineering, sciences or humanities) in university, is reserved for students in the technological high school route, provided they fulfil the requirements and pass the Technological Matriculation Examinations (Israel Ministry of Education and Culture, 1987). Another possible advancement route for the technological high school graduates is further studies in engineering technology.

Engineering Technology Education - Practical-Focused Professionalism

The aim of engineering technology education, which is basically a post secondary process, is to train technical personnel (Technicians and Technologists - Practical Engineers) who ought to serve as a link between the academic engineer and the practical reality (involving skilled workers and/or automatic manufactoring).
There are various versions of engineering technology education in countries around the world: TAFE in Australia, engineering Technology in the U.S. or Handasaim in Israel. The period of training varies between two and four years, depending mainly on the entry level of the students and their final degree (Technician or Technologist).

Engineering technology focuses on practical professional tasks involved in development, production and maintenance of technical equipment as well as management of industrial processes including, of course, human factor considerations. The technologist is sometimes the academic engineer's assistant in design and development of new products (building and running prototypes, for instance). In other cases he may have quite an autonomous situation - being responsible for running a certain production line or maintenance of operating machinery. A Systematic Curriculum Alignment and Watch (SCAW) model for determining the skills and knowledge required from a technologist at work in a high-tech environment (for curriculum updating purposes), has been developed by the author (Waks, 1989).
In any case, decent practical professionalism is required. It seems that engineering technology is located among the most dynamic professions, sometimes more than engineering itself. The academic engineer deals mostly with planning or designing the *basic concepts* of a desired technological system, for optimal *functionality*. The technologist is more engaged in ***structures*** which are supposed to materialise those basic concepts and ideas. The lifetime of a concept (for instance: "Amplification") is frequently longer than its materialised structure ("Amplifiers" have changed structure - Vacuum Tubes, Bipolar Transistors, Field Effect Transistors, Integrated-Circuits Operational Amplifiers; still "Amplification" remained the same basic concept). Continuing education of the technologist for updating purposes, might sometimes be not less critical than for the academic engineer himself.
Therefore an appropriate framework for a hierarchy of a technologist's professional levels or degrees, should be created - may be similar in a way to the academic hierarchy (fisrt, second and third degree). These degrees (with the privilleges they offer) must not be awarded for a lifetime, they can be granted for a predefined period of time - their renewal might be conditioned on meeting fresh updating requirements.

R&D Aspects Regarding Technology Education - Role of University

Let us assume that it has been decided, in a certain country, to include science as a part of the curriculum - many problems still remain to be solved in this regard:

(a) Determine the goals to be achieved by this act and locate/develop appropriate tools for assessing the extent to which those aims will indeed be reached.

(b) Determine the contents of the sciences to be included in the curriculum, subject to its predetermined goals. An example of disagreement in this regard one can find by comparing Hirsch's list of science vocabulary with a list of science related terms compiled by Koelsche and Morgan (1964). They gathered knowledge items (a slightly larger list than Hirsch's) needed by readers to understand popular-science articles. A comparison showed that less than one third of the terms were identical in the two lists.
Educational research initiatives should be undertaken to find scientific-objective tools to determine the contents of the science curriculum by relying on multi-sources of information in reality. It is not enough to rely merely on a small number of occasional experts from certain disciplines (Waks, 1989).

(c) Development of adequate teaching/learning materials in order to convey effectively the scientific contents to broad ranges of pupil populations so the relevant science knowledge be adopted as part of the modern individual's culture. In many countries, curriculum development activities are carried out quite intensively - in response to local needs and pressure coming from the various economic sectors. In many cases the development of such curriculum materials is not followed by adequate research activities as to their validity or efficiency, especially in regard to their long-run affect on the various learners' populations.

Meaningful technology education in all its forms mentioned in the above sections, can not evolve by itself all alone. It is the author's belief that systematic research and design measures have to be implemented in order to investigate the needs of individuals and society in regard to technology education in any modern industrialised or developing country. This mission can not be carried out by politicians or other society leaders, for obvious reasons. Academic freedom and independence of thought is needed, to arrive at rationale objective decisions with a human focused perspective toward the future, sometimes by sacrificing some interests of the immediate present or near future. The academia, with its combined scientific, human and engineering assets, has to mobilise its resources to help in this matter. An attempt in this direction has been carried out by the author, as faculty member at the Technion - Israel Institute of Technology (since the early seventies). A master plan has been designed which relates to technology education in Israel (Waks, 1985), dealing with curriculum research and development and preparing teachers, curriculum developers and researchers in this area. Pedagogic courses have been integrated in the engineering undergraduate curriculum (as electives). A program of graduate studies for both, a Masters as well as for a Doctorate degrees in Technology Education has been prepared and implemented. Four Doctors of Science and six Masters of Science have already graduated and are carrying out research in technology education in Israel and abroad. Three research teams have been established at the Technion, two (in Mechanical and in Electrical Engineering Technology) have been involved, since 1985, in a research project on Formation of Policy for Technological Education in Israel (Waks, 1986) and the third team is engaged in a curriculum development project on Robotics for high school students. The unique feature of this upcoming generation of researchers in technology education is their solid background in sciences and in engineering combined with pedagogic knowledge and educational awareness, they are both, educators and engineers.

Some "Cosmopolitan" Consequences

- Science or technology do not "recognise" borders of any kind (geographical or political). Social implications of technology do possess national or local characteristic aspects, but the principles of technology and science are universal. They can be applied principally in any country, underdeveloped or developed.

- In the era of modern international communication and traffic, when people of different nations become inhabitants of the same "Global Villege", it is quite a waste, in the worldwide sense of the word, for many countries or institutions, to allocate national resources in seperate curriculum development of the same scientific prinnciples.

- It is high time to recruit and concentrate international scientific and technological human talents, and provide them with adequate means to create a core of universal high (pedagogic-didactic) quality instructional materials. This can be carried out under "one roof", in an international university for pedagogic sciences in technology related contents, for the benefit of mankind as a whole. An official written proposal in this regard has been submitted by the author at the UNESCO International Congress on the Development and Improvement of Technical and Vocational Education, held in East Berlin, Summer 1987.

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VOCATIONAL EDUCATION/GENERAL EDUCATION - A FALSE DICHOTOMY?

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A major conference like this one, focussing on recent research and development in vocational education, is likely to take for granted answers to questions such as:-

What is vocational education?
What distinguishes it from other sorts of education?

This is so especially since traditions and institutional arrangements encourage us to think that vocational education is essentially different from other sorts of education. It seems self-evident that vocational education is directed at labour market preparation while other sorts of education are not. And yet there have always been grounds for questioning the validity of the vocational education/general education dichotomy. In recent times a number of developments have combined to render this dichotomy even more pointless. However, before going on to consider these developments let us briefly consider some of the arguments that have been advanced in favour of the dichotomy.

THE ALLEGED VOCATIONAL EDUCATION/GENERAL EDUCATION DICHOTOMY.

One well known version of the dichotomy is as follows:

> Here is the criterion for determining what subject or what parts of a subject should be taught at a university. If the subject lends itself to disinterested thinking; if generalization can be extracted from it; if it can be advanced by research; if, in brief, it breeds ideas in the mind, then the subject is appropriate for a university. If, on the other hand, the subject borrows all its principles from an older study (as journalism does from literature, or salesmanship from psychology, or massage from anatomy and physiology), and does not lead to generalization, then the subject is not a proper one for a university. Let it be taught somewhere by all means. It is important that there should be opportunities for training in it. But it is a technique, not an exercise for maintaining intellectual health; and the place for technique is a technical college.
>
> (Ashby, 1946, p.81)

Ashby's suggestions for postsecondary education have a certain plausibility. For a start they incorporate the idea that institutional arrangements validate the dichotomy - universities for general education, technical colleges for vocational education. (Of course, there were no Colleges of Advanced Education in Australia when Ashby was writing. Presumably teacher training institutions and the like belonged with technical colleges). Ashby's suggestions also seem to explain a range of historical facts about the development of particular university courses. In law and medicine general principles underlying the profession are the province of the university, whilst specific vocational skills are learnt away from the university as an articled clerk or intern. Certain subjects faced a long battle to gain a place in universities. In N.S.W., pharmacy was an apprenticeship course at Sydney Technical College until it could finally breed enough ideas in the mind to move to the University of Sydney. The struggle of engineering to gain acceptance within universities was long and complex (Ashby, 1966, Ch.3). Even today there are some who would argue that education as a subject is not conducive enough to the maintenance of intellectual health to warrant faculty status within universities.

However despite any initial plausibility that might attach to Ashby's criterion, the post-World War II period has seen a breakdown of the dichotomy as universities in the industrialized countries have moved strongly into vocational education (Grubb, 1985, p.531). Faculties of business, social work, nursing, library science, etc., have proliferated, although some of the more traditional (and elite) universities have resisted this vocationalizing trend.

If the universities have been unable to confine themselves to their half of the alleged dichotomy, then the same is true of TAFE. While vocationalism has been perceived as the dominant thrust of technical education, the issue of general education has never entirely disappeared from the agenda. General education was prominent in the earliest Mechanics Institutes and it is prominent in TAFE colleges in the 1980's in Australia.

So far is has been argued that even if Ashby's version of the vocational/general dichotomy were valid, the institutional arrangements have failed to support it in the way he recommended. We now proceed to consider three classes of arguments for the view no version of the dichotomy is valid. These classes of arguments I call, respectively, economic, technological and educational.

ECONOMIC ARGUMENTS AGAINST THE DICHOTOMY.

Firstly, from the economist's point of view the vocational education/general (or academic) education dichotomy creates confusion. This is so because the

> .....distinction, which is actually grounded in the nature of the two curricula, is allowed to carry the implication that some education prepares students for the world of work and some does not. All too frequently however, those who have taken courses of study generally called "academic".... reap substantial financial returns from their education, thus producing the paradoxical conclusion that academic education has a greater "vocational" value than vocational education. The traditional distinction was developed by educators but the labour market has its own way of appraising qualifications.
>
> (Blaug, 1972, p.247)

Secondly, and more crucially, economists have rebutted the common sense view that vocational education, rather than general education, is what fuels economic growth. In the 1960's developing countries were being urged by organisations such as UNESCO and the World Bank to divert their schools at all levels from basic general education to large scale technical and agricultural education. In a trail-blazing attack on this position, Foster (1966) argued that vocational programs would only be successful under very special circumstances and that in the absence of these special circumstances, general education would be more effective. The special circumstances involve integration of the vocational education with genuine work experience. The option of jobs accompanying vocational education tends to be restricted to areas of the economy where rapid growth is being experienced and/or where there is a significant shortage of skilled labour. Twenty years later UNESCO and the World Bank have come around to Foster's way of thinking.

The same principles have applied to those industrialized countries that have attempted to substitute vocational education for general education at secondary school level. It works where the special circumstances already discussed apply, if not, no labour market advantage is gained by the recipients of vocational education (Grubb, pp.529-530). At the post-secondary level the picture is less clear, but once again it seems that specific vocational education is fine where it fulfils definite labour market needs, but otherwise it is the graduates of more general educational programs that fare better in changing labour markets (Grubb, pp.532-533).

We could summarise both of the economic arguments against the dichotomy as follows:-

> "Supposedly non-vocational general education turns out to be just as vocational as vocational education. Hence the dichotomy collapses."

In response to the preceeding discussion, it should be noted that there is a school of thought that is sceptical about any sort of education contributing to economic growth. This in turn leads to the view of education as credentialism. Illich (1971) argued that most learning occurs informally and that formal education operates as an artificial device for restricting access to lucrative occupations. Collins (1979, pp. 54-55, 189) takes this further:-

> .....the great majority of all jobs can be learned through practice by almost any literate person. The number of esoteric specialities "requiring" unusually extensive training or skill is relatively small....
>
> It has been by the use of educational credentials that the lucrative professions have closed their ranks and upgraded their salaries, and it has been in imitation of their methods that other occupations have "professionalized".....
>
> .....we have not moved toward a high-leisure society, despite our technological capacity for doing so. We have elaborated a largely superfluous structure of more or less easy jobs, full of administrative make-work and featherbedding because modern technology allows it and because of political pressures from the populace wanting work.
> ....In effect, leisure has been incorporated into the job itself..

Collins' proposed solution is the rather drastic one of abolishing credentials altogether.

Jones (1982, p.160) reacts to these credentialist sceptics by concluding that instead of distinguishing vocational and general education, and regarding the latter as an extra, we should be happy to pay for "education for education's sake". Jones continues:

> "...we ought to be prepared to accept that the worth of a society can be measured not only by the consumption of goods and physical amenities, but also by its willingness to provide psychological amenities - knowledge, understanding, expanded consciousness, cultural responsiveness and increased creativity. We must recognise that psychological needs are at least as important as physical ones."

TECHNOLOGICAL ARGUMENTS AGAINST THE DICHOTOMY.

The need for a flexible workforce in order to cope with rapid technological change has become a commonplace in the last decade. In brief the argument is as follows: Specific skills are increasingly becoming obsolete in the wake of accelerating rates of technological change. So education should concentrate on general skills that are applicable in a wide range of diverse situations, thus equipping people to quickly acquire new specific skills as the need arises. General education is seen as a major component of vocational education. It is interesting to note that the Kangan Report of 1974, - seemingly universally revered as providing the correct philosophical basis for TAFE in Australia - uses this argument to bring vocational and general education together:

> It is important that general education be seen as relevant to vocational purposes and that vocational education in turn becomes more general in its content and methods so that people can be better prepared to adapt themselves to changing conditions and to re-training, as necessary, at any time of their working lives.
>
> (TAFE in Australia, p.xxiii)

As this quotation emphasises, the reconciliation between general and vocational education is not just another recommendation amongst many others, but rather constitutes one of the major premises of Kangan's thinking. It is the basis of the recurrent education concept that pervades the Kangan Report.

These technological arguments have been recently given a new twist. Studies by the OECD and CEDEFOP (European Centre for the Development of Vocational Training) have found that, contrary to the common view that the main effect of technological change on the nature of work is deskilling, the opposite applies. (The total number of jobs is, of course, another issue.) The general findings are that recent technology creates a more complex workplace where roles and tasks are more ill-defined and constantly changing, where the work itself is more abstract and intellectually demanding and where there is much less repetition than in more traditional workplaces.

Bertrand and Noyelle (1988) studied technological change in banks and insurance companies in the United States, Japan, Germany, France and Sweden as part of an on-going project for the OECD's Centre for Educational Research and Innovation. They found that this once stable and continuous sector is undergoing rapid change everywhere due to increased competition and growing use of computerised technology. This has required drastic revision of work patterns and organisation. (See Table 1).

To demonstrate that these changes make nonsense of the vocational/general dichotomy, consider what Bertrand and Noyelle conclude to be the educational requirements for the new middle-tier workers:

> "...the new skill requirements seem to place a premium on "liberal arts" education (to use the Anglo-Saxon terminology) at the secondary and even early post high school level, that is on curricula which emphasize the teaching of broad skills rather than specialized, vocational knowledge: reading, writing, arithmetic, both verbal and written communication, the capacity to understand broad rather than specialized environments, and to identify problems and define solutions for oneself rather than memorise ready-made solutions to pre-assigned problems. As one bank official put it: "The bank can train anyone in the becoming proficient in the use of specific techniques and procedures; the bank cannot train train individual workers in thinking for themselves, in being at ease with broad and complex environments."
>
> (1988, p.73)

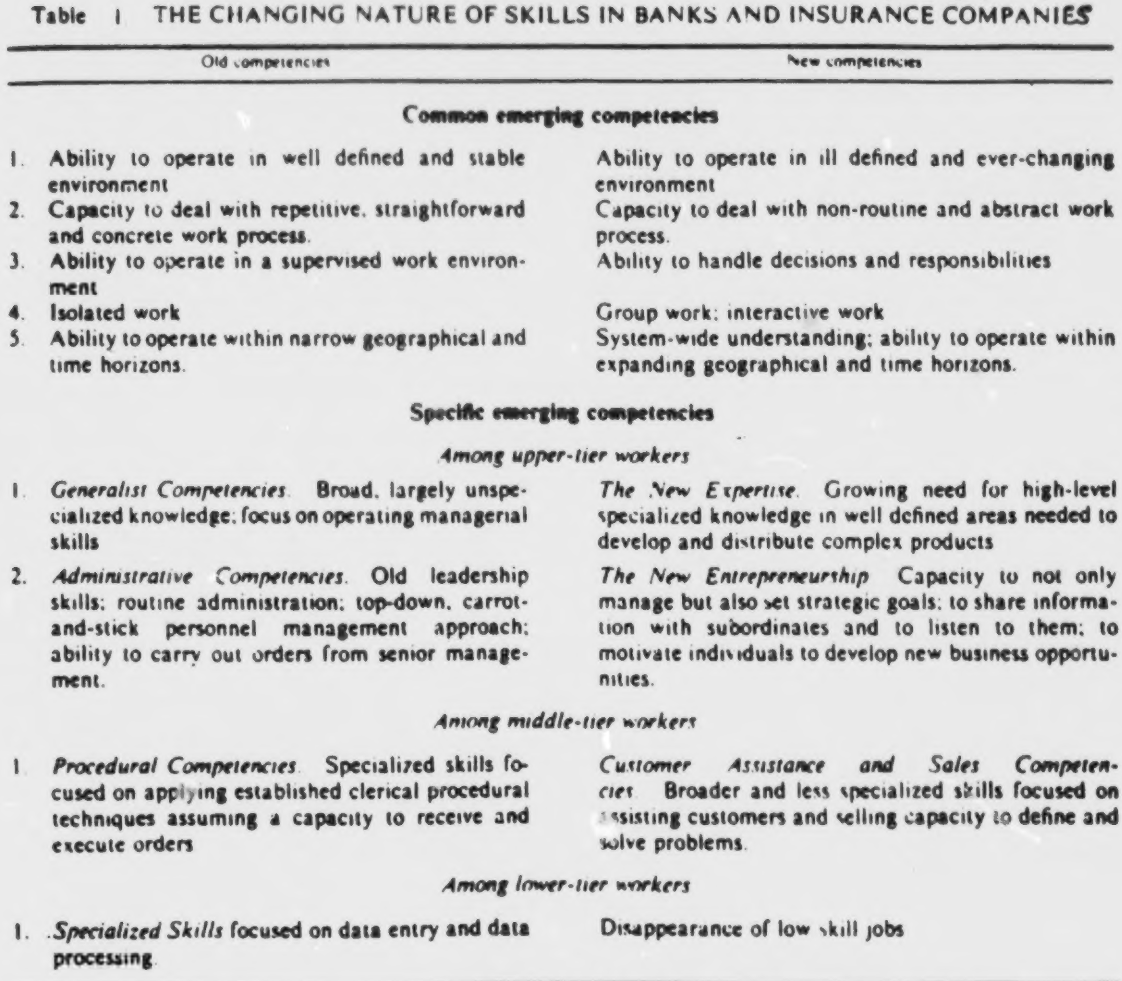

Table 1 THE CHANGING NATURE OF SKILLS IN BANKS AND INSURANCE COMPANIES

Old competencies	New competencies
Common emerging competencies	
1. Ability to operate in well defined and stable environment	Ability to operate in ill defined and ever-changing environment
2. Capacity to deal with repetitive, straightforward and concrete work process.	Capacity to deal with non-routine and abstract work process.
3. Ability to operate in a supervised work environment	Ability to handle decisions and responsibilities
4. Isolated work	Group work: interactive work
5. Ability to operate within narrow geographical and time horizons.	System-wide understanding; ability to operate within expanding geographical and time horizons.
Specific emerging competencies	
Among upper-tier workers	
1. *Generalist Competencies.* Broad, largely unspecialized knowledge; focus on operating managerial skills	*The New Expertise.* Growing need for high-level specialized knowledge in well defined areas needed to develop and distribute complex products
2. *Administrative Competencies.* Old leadership skills; routine administration; top-down, carrot-and-stick personnel management approach; ability to carry out orders from senior management.	*The New Entrepreneurship.* Capacity to not only manage but also set strategic goals; to share information with subordinates and to listen to them; to motivate individuals to develop new business opportunities.
Among middle-tier workers	
1. *Procedural Competencies.* Specialized skills focused on applying established clerical procedural techniques assuming a capacity to receive and execute orders	*Customer Assistance and Sales Competencies.* Broader and less specialized skills focused on assisting customers and selling capacity to define and solve problems.
Among lower-tier workers	
1. *Specialized Skills* focused on data entry and data processing.	Disappearance of low skill jobs

SOURCE: Bertrand and Noyelle, 1988, p.41.

CEDEFOP in 1987 devoted the first issue of its journal Vocational Training to "The factory of the future and the future of work". The major topics dealt with by the various contributors are the new work roles and work organisation required for flexible manufacturing systems that sophisticated computer technology has spawned. There are striking similarities to the findings of Bertrand and Noyelle for banks and insurance companies. In the education of new factory operatives, it appears that once again the vocational/general dichotomy collapses:

> Operatives and their supervisors are now expected not just to react to events and single incidents but to anticipate them and take action. This broadening of the abilities demanded is radically changing the basic skills needed. Operatives must be capable of analysing and thinking for themselves. In addition to their basic technical knowledge, they must be capable of lateral thinking so that they can apply that knowledge within certain frames of action. They must also possess what, for want of a better term, will be referred to as the "behavioural and attitudinal qualities" of forethought and commitment to the work they do. These will be determined by their "social skills", their value systems and, in the final analysis, their education. It is altogether logical that the new skills expected of workers extend far beyond technological expertise, raising the question of what basic standard of education is required of skilled operatives.
>
> (d'Iribarne, 1987, pp.8-9)

Some of the broad trends outlined in the last few pages (multiskilling, less rigid division of labour, more individual and collective responsibility) are evident in the restructured metal industry award in Australia currently nearing completion. It is interesting to find Carmichael, one of the chief protagonists of the metal award restructuring, reporting that at a recent OECD conference in Paris in which he participated, twenty-two of the twenty-four member nations supported the proposition that general education and vocational education must now converge. (Carmichael, 1988, p.13)

EDUCATIONAL ARGUMENTS AGAINST THE DICHOTOMY.

So far we have seen that from the viewpoint of economics and modern technology an insistence on distinguishing vocational education from general education doesn't make sense. Are there any educational grounds for arriving at the same conclusion? One significant educator who certainly thought so was A.N . Whitehead. In the first decades of the twentieth century, he argued strongly and consistently for his view that the:-

> antithesis between a technical and a liberal education is fallacious. There can be no adequate technical education which is not liberal, and no liberal education which is not technical: that is, no education which does not impart both technique and intellectual vision.
>
> (Whitehead, 1950, p.74)

This claim stems from the conviction that while there are three basic kinds of curriculum, they cannot in practice be kept totally divorced from one another without disastrous results for education. The three kinds of curriculum are:

1. The Technical curriculum, which aims at manual skills.
2. The Scientific curriculum, which aims at knowledge ('intellectual vision').
3. The Liberal curriculum, which aims at general appreciation of ideas ('moral vision').

Clearly, nobody has the time to pursue simultaneously all three curricula in depth. Whitehead's point is that whichever of the three is pursued in depth, elements of the other two must be included, so that "every form of education should give the pupil a technique, a science, and an assortment of general ideas and aesthetic appreciation". Further, "each of these sides of his training should be illuminated by the others". So "technical education is doomed" if we see it as mere equipping of students with "one highly specialized manual aptitude". Rather technical education "should be broader than the ultimate specialization, and the resulting power of adaptation to varying demands is advantageous to the workers, to the employers and to the nation".
(Whitehead, 1950, pp.75,86)

So people become more flexible, mobile and interested in their work.

Whitehead stresses that his three aspects of any curriculum must be linked and brought together. They must not be taught as separate subjects by different teachers, i.e., the all too common situation in present day courses. This integration of the three aspects of the curriculum is the major challenge to the teacher's skill. "The problem of education is to retain the dominant emphasis, whether liberal, scientific or technical and without loss of co-ordination to infuse into each way of education something of the other two".
(Whitehead, 1950, p.85)

Unfortunately, Whitehead's pleas for integration have gone largely unheeded. Whilst very many TAFE courses include elements from the three kinds of curriculum, there are plenty of pressures that encourage teachers to identify with one or other of the curricula, whilst being alienated from the rest. An important influence here is the specialization that has so often dominated teachers' own education and work experience. TAFE Departments tend to be structured in such a way as to reinforce these trends. In New South Wales we often have separate schools for Whitehead's three kinds of curriculum, e.g., in the electrical field the School of Applied Electricity looks after the technical (trade) curriculum, the School of Electrical Engineering, the scientific (associate diploma) curriculum and the School of General Studies is on hand to provide any liberal curriculum requirements.

Amongst other pressures encouraging the fragmentation that Whitehead so strongly opposes are jealousies and suspicions aroused by differences in qualifications and salary levels, e.g., tradesman versus graduate, sciences versus humanities, etc. Little wonder then that controversy and dissatisfaction with the liberal components of TAFE courses has been an oft-recurring issue!

Earlier in this paper, we found Ashby consigning the development of the mind to universities, leaving techniques to technical colleges. I equated this crude distinction with the general/vocational dichotomy. It also lines up with the mental/manual dichotomy which has dominated British (and therefore Australian) thinking in education.

Mental work has high status in contrast to the low status of manual work. As Sweet (1988, p.351) points out, the mental/manual dichotomy "is increasingly irrelevant as modern information technologies embody complex intellectual processes into the operation of production equipment". Whitehead's account of how to develop a well-rounded curriculum may look a bit old-fashioned, but it has the merit of suggesting that merely integrating the mental and the manual, i.e. "theory and practice" or "the technical and the scientific", is not enough. There is the wider understanding represented by the remaining strand of Whitehead's curriculum, the liberal strand. When I read the literature on the new kinds of workers required by advanced technology, I get the impression that a good worker will be at the same time a good citizen, i.e., an all-round human being with the knowledge and confidence to play a significant role in both the workforce and society. If this is so then Whitehead's views might yet have something to teach us.

CONCLUSIONS.

Australian education continues to labour under the delusion that general, academic, intellect-developing education is superior to and distinctly different from vocational, practical, skill-oriented education. Thus recent major reviews of secondary education in N.S.W. (Swan and MacKinnon, 1985) and Victoria (Ministerial Review of Postcompulsory Schooling, 1985) both rejected a role for schools in direct vocational preparation. At the same time, the increased participation rate in postcompulsory schooling has led to an increasing number of optional subjects of a quasi-vocational kind. These subjects have neither significant articulation with higher education or TAFE programs nor significant recognition in the labour market. The message about the worth of vocational education is clear. Ironically this situation is supposed to be supporting a "common curriculum" as against divisive streaming.

Sweet (1988, pp.353-4) urges that instead of a common curriculum, we need to create a common credential in the postcompulsory years:

> Parity of esteem for vocational and non-vocational courses necessitates the creation of single postcompulsory certificates which are common across both TAFE colleges and secondary schools.

If the arguments of this paper are correct, such a common credential is the way to go. However, it will only succeed if powerful traditions and pervasive attitudes are abandoned. Along Whiteheadian lines vocationally oriented courses need to make more explicit their contribution to the development of broad, general thinking and social skills. At the same time general education needs to show a lot more awareness of the vocational significance and relevance of what it has to offer. The reconciliation of the vocational and the general in its education system is vital to the future of Australia.

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RECENT RESEARCH AND DEVELOPMENT IN VOCATIONAL EDUCATION
International Conference, 12-19 March 1989, Adelaide, S.Australia

TOWARDS AN ENTERPRISING CULTURE: EDUCATION FOR AN ACTIVE SOCIETY

by Colin Ball, consultant to the Centre for Educational Research and Innovation at the Organisation for Economic Cooperation and Development (OECD), Paris.

This paper briefly summarises some of the findings of, and issues arising from, research carried out for the OECD in 1987/88. The full report on the research has recently been published by the OECD, under the same title as this paper.(Ball, 1989)

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The background to, purpose, and scope of the research

The research formed part of the 1987 programme of work of the OECD's Centre for Educational Research and Innovation. Earlier research carried out by the Centre (Coleman and Husen, 1985; Ball, Kuenstler and Stares, 1986), on the problems faced by young people in making what is generally termed 'the transition to adulthood', had indicated the existence, in a number of OECD Member Countries, both at secondary and post-secondary levels of education, of innovative initiatives aiming to help young people acquire what are usually termed "enterprise skills". The rationale behind such initiatives is variously stated, but in general such "skills" are seen to be as needed by young people if they are to make a successful and smooth transition from the education and training system to adult and working life as a good and broad general and vocational education. Thus the research mounted in 1987/88, described here, aimed to look at these developments in more detail. It aimed to determine how, why, and to what effect the "enterprise skills" initiatives had been established, in order to determine their implications for both policy and practice in the education and training field.

The scope of the research, like all research, was limited by time and budgetary considerations. It was decided to obtain detailed information from eight countries, through a combination of research visits by the consultant, and reports commissioned from a small group of experts or submitted by interested governmental sources. In addition, the consultant gathered documentation from other sources, including the Commission of the European Communities.

The research commenced in March 1987, and was completed by December 1987. By that time detailed reports had been prepared on developments in Australia, Canada, Ireland, Japan, The Netherlands, Sweden, the United Kingdom, and the United States of America. In addition, information from Denmark, France, Greece, Italy, and Spain was also gathered and analysed.

The information and research findings were brought together by the consultant in a report which was first considered by the Governing Board of the Centre for Educational Research and Innovation in May

1988. The Board authorised publication of the report, and at its next meeting, in December 1988, discussed the issues arising from the research in more detail, and considered the relevance of its findings to continuing OECD research, especially to a major project on the curriculum and to a topic of growing interest to the OECD and to many member countries, known as "The Active Society". As a result of the perceived close connection with both these topics, a connection which will be outlined further below, further research is now likely to be mounted by the OECD in the immediate future.

Some of the principal findings of the 1987/88 research are now outlined, followed by a discussion of some of the principal issues arising from it, including the above-noted connections.

What are "enterprise skills" ?

In general terms, two "answers" to this question can be discerned from existing practice in the OECD Member Countries studied, and these represent two interpretations: a "narrow" one, and a "broad" one.

The narrow interpretation regards "enterprise skills" as that body of skills and knowledge required in business and entrepreneurial activities. In practice, this interpretation typically manifests itself in groups of students, either within the curriculum or on an extra-curricular basis, setting up and running a real or simulated business. Within secondary schools, the most well-known example of this kind of approach, found in many countries, is "Junior Achiever" (the name used varies from country to country: in Australia it is Young Achievement Australia).(Turner, 1988)

In the arena of further education and post-compulsory vocational training schemes, the narrow approach is manifest in the schemes that have been established in a number of countries to help young, otherwise unemployed, people to get into self-employment or start their own businesses. What lies behind these developments - which include initiatives such as The Prince's Youth Business Trust in the United Kingdom (Grayson, 1986), the Youth Enterprise Programme established by the YMCA in Canada (Shuttleworth, 1988), and the Young Adult Business Initiative in Boston, USA (Jobs for Youth, 1987) - is the view that policies to promote small business formation (which are to be found in many OECD Member Countries) should include incentives to young unemployed people to take such action.

The broad interpretation of "enterprise skills" is an extension of, rather than an alternative to, the narrow one. This interpretation sees these skills as a set of personal attributes, qualities, abilities, and even "values" which encompass creativity, powers of taking and exercising responsibility, the ability to solve problems, to learn to learn, to take initiative, be flexible, adaptable, active, purposeful, and self-confident. This interpretation is termed "broad" not just because of this broad content. It sees these "skills" (although it should be noted that "skills" is not really an adequate description, but is used here, nonetheless) as applicable and needed in a wide range of living and working contexts and not just the economic (entrepreneurial) one. The rationale for the broad approach is that there are many situations in which individuals need to have broad enterprise skills of creativity, problem-solving, flexibility, adaptability, pro-activity, responsibility, etc etc, including the family, the community, the labour market, and the workplace. The narrrow approach argues that the more people there are in society that can be economically pro-active, that is, entrepreneurial, the better. The broad approach extends this, in two ways. It says firstly, that the more people there are in society who can be enterprising in response to all life's challenges and problems, the better. Secondly, many of those involved in the broad approach argue that all individuals in society must have the attributes, qualities, abilities and values involved in being enterprising and resourceful. There is of course a major implication of this: activities to enable young people to acquire "enterprise skills" are marginal in curriculum terms when the narrow approach is adopted, aiming simply to increase, marginally, the numbers of entrepreneurs. But the broad approach implies that broad enterprise skills-orientated activities should be part of the core, central purpose of education and training for all young people, taking their place alongside such purposes as the acquisition of reading, writing, communicating, counting, and specific vocational skills.(Dawkins, 1988)

When asked to justify such bold arguments, that enterprise skills are a "must", for "all", the word change is frequently used. In general terms, the justification put forward is that currently, and for the foreseeable future, modern, developed societies are characterised by rapid and continuing social and economic change. To cope with, adapt to, and influence change, and to avoid being its victims, individuals need broad enterprise skills. What this change amounts to is a change in the balance of responsibility between what individuals do for themselves, on the one hand, and, on the other, what others - and especially society's institutions - do for them. This changing balance can be seen in many economic and social contexts. Three of these are now briefly outlined.

Change in the workplace

In the workplace, the need for companies to be competitive, the continuous introduction of new technologies and processes, the flattening of management and organisation hierarchies, and the development of flexible, versatile, and human resource-intensive role- and responsibility-division systems which replace the rigid Fordist and Taylorist structures, ar producing changes which have impact on all workers, at all levels, in all sectors. (Peters and Waterman, 1983; OECD, 1986; Murray, 1988) More and more, people's jobs require them to use initiative, be creative, work as teams, communicate across functional boundaries, have multiple skills, take responsibility, be versatile, flexible and adaptable. Increasingly, the main factor affecting the capacity of a company, or indeed a country, to be and remain competitive is the quality of its human resources. That quality is the sum total of the skills, knowledge and enterprising abilities of its workforce and population. As Akio Morita, President of the Sony Corporation has put it (Morita, 1988): " we must teach ourselves to be agents of change. That requires a lot of creativity and courage, for each day is an educational experiment and experience."

Change in the labour market

It is less and less likely that an individual's experience of the labour market will be characterised by a smooth entry into one particular job which is then held for life. Individuals already need to regard the changing of jobs and the constant learning of new knowledge and skills as the rule rather than the exception. If they do not, they will become the victims of change in the labour market and be prone to prolonged unemployment. (Coleman and Husen, 1985) As in the workplace, therefore, individuals in the labour market need to be able to take their own initiatives, to complement and make the best use of those actions taken by the state and its institutions to improve labour market flexibility and assist those affected by labour market and economic change. Here again, they need to be enterprising.

Social change: "The Active Society"

Changes in the way societies and their governments go about meeting social needs and combatting social problems are also evident, and will continue. For most of the past 40 years, fully employed societies have been able to produce, through taxation and insurance levies, sufficient revenue to meet social needs and combat social problems, through transfer payment systems and financing specialist professional and institutional cadres to ensure the health, education and welfare of all individuals in society. Now this kind of "welfare state" is changing, for a number of reasons and with a number of consequences. "Full employment" does not exist in the form it used to have; the "rising tide" of elderly people in the population is markedly swelling the numbers of the non-economically active; there is concern that institutionalised approaches to social needs among the non-active "may foster the very dependence and alienation from which social policy should help them escape.." (Gass, 1988), and that increasing divisions between the active, employed members of society and the non-active 'underclass' are "...incompatible with accepted standards of social justice in industrialised societies..." (Gass, 1988) What all this is creating is a desire to create new social policies which encourage and enable all members of society to play active roles in it. To play them, everyone needs enterprise skills.

The "Enterprising Culture"

What the three foregoing sections amount to, as noted, is the emergence of a new balance of responsibilities between individuals and the institutions in which they work, or upon which they can call for assistance. The new balance is not dramatically different from the former one. In particular it cannot be said to be characterised, except perhaps in some exceptional and extreme political or economic circumstances, by institutions wholly giving up their responsibilities and throwing all the onus upon individuals. Nor can cause and effect easily be separated: institutional responsibility is not diminishing solely because institutions see a need to reduce it. In some situations, individual responsibility is increasing because people themselves want to have more power over their lives. (Illich, 1977) What can be said is that there is a perceiveable shift towards more enterprising, active societies and cultures, in which individuals are more active and enterprising.

The broad approach in practice

Initiatives based on the narrow interpretation are easy to identify. They can be found, in and immediately around the education and training curriculum, in the form of models, kits, games and other packages, developed over recent years, and in financial support and training schemes for the young unemployed. But the very nature of the broad interpretation makes initiatives based on it less easy to identify. They appear in a wide variety of forms, within schools, the further education and vocational training systems, and in many formal and informal "youth work" settings. A few examples illustrate the variety:

- in both the Province of Ontario in Canada and in Ireland, there have been major initiatives to bring enterprise skills into the secondary school curriculum. In Ontario three new levels of *Enterprise Studies Curriculum* have been developed, offering credit to high school students, which aim to foster personal development through what is termed "self-directed, action-learning".(Rabbior, 1987) In Ireland, 300 secondary schools have adopted similar curricula, known as *Enterprise: The Key to the Future*.(O'Connor, 1988)

- in the United Kingdom a major project was mounted for trainees on the government's Youth Training Scheme, known as *Entrain*. Through the initiative, trainees were helped to identify and run their own business, community service, training or adventure activities. (Roberts, 1987)

-in Sweden the *Varmlands Cooperative* runs courses for young unemployed people to develop skills and self-confidence by identifying and running their own projects.(Wallin, 1988)

-in the United States "alternative" schools known as *Enterprise High* have been established, initially in the Detroit area, but now in three other states. These schools, which cater for high-school dropouts, havbe acheived remarkable success in motivating young people by using methods which are built around students identifying and running their own businesses and other projects. (Benedict, Miller and Snell, 1985)

-in Australia, the *CITY Programme* in Adelaide was an early pioneer in the field of encouraging and assisting young people to learn enterprise skills through various forms of project-centred work. (Turner, 1988)

Enterprise Learning

From such varied practical experience one principal practical conclusion emerges: the broad approach to helping young people acquire enterprise skills is characterised by being a development of educational *methods*, which contrasts sharply with the narrow approach which is, as noted, mainly a *curriculum* development. The method involved can be termed *enterprise learning*. Helping young people to develop powers and abilities such as those involved in creativity, initiative, decision-making, problem-solving, adaptability, responsibility, etc etc is not something that can be done by teaching them a predefined body of general or vocational knowledge. Enterprise skills can only be learned by real, perhaps risky, and certainly role-rich experience, of a kind that is learner controlled, and teacher facilitated. Enterprise skills are part of what teachers often term "personal development", and as such are not new.

Getting away from the preoccupation with curriculum

If it is, then, nothing more than "affective learning" or "personal development" revisited, enterprise learning is liable to be greeted with reactions such as " there's nothing new in this, we are doing it already ", but such reactions have a hollow ring, for they duck the many challenges that confront educational policy-makers and practitioners, challenges that go right to the heart of current concerns about the quality, content and relevance of general and vocational education. In particular, the research indicates that in recent years, perhaps educationalists have come, wrongly, to equate educational development and improvement with curriculum development, as epitomised by the current debates about and research into the "core curriculum", "basic skills", and "multi-skilling", and associated concerns about levels of educational attainment. This research indicates that at all levels of education - especially secondary, further and post-compulsory vocational, there needs to be a thorough-going rethink of educational methods and of the organisation of education. For there seems no escaping the conclusion that many aspects of current educational methods and organisation, are, as a contribution from Japan to the research noted, "dysfunctional" to the requirements of the emerging enterprise culture and active society. (Mimizuka, 1988) Such aspects include: overpreoccupation with teaching (as opposed to learning); concentration on the assimilation of knowledge; the structuring of schools and colleges on outmoded Taylorist and Fordist lines; and the stifling of creativity among, and initiative in, learners.

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WORKSHOP K

Theme: Education/Industry Links.

Tuesday March 14. 3.30 pm; Friday March 17. 3.30 pm.

Adelaide Room 1

Mr. W.J. Devlin. ICI Australia Operations. *ICI/TAFE Cross Trade Training of Electrical and Instrument Tradespersons.*

Dr. J.A. Laurent, Institute of Adult and Technical Teacher Education, Sydney College of Advanced Education. *What do the Unions want from TAFE?*

Dr. Barry Elsey, Senior Lecturer, Human Resource Studies. Centre for Human Resource Studies, South Australian College of advanced Education. *Theory Background and Research Evaluation of an Innovative Programme of Professional Staff Development in the Interface between Education and Economy.*

Dr. Marietta Casterlieva, University of Veliko Tarnovo, Bulgaria. *Relation between Education and Industry through Teaching Geography and English Language.*

ICI/TAFE CROSS TRADE TRAINING OF ELECTRICAL & INSTRUMENT TRADESPERSONS

W J DEVLIN – ELECTRICAL/INSTRUMENT DEVELOPMENT MANAGER
ICI AUSTRALIA OPERATIONS PTY LTD
R SEARY – HEAD OF DIVISION SCHOOL OF APPLIED ELECTRICITY
NSW TAFE

INTRODUCTION

Early in March 1988, ICI Australia Pty Ltd Botany commenced the most ambitious educational and training program ever undertaken by the Company. The objectives of the program were to develop:

(a) an integrated workforce of electrical and instrument tradespersons on the company site.
(b) the skills and knowledge of the workforce so all electrical and instrument tradespersons can work within the Statutory Authority requirements.
(c) an identified educational base for which the Company can plan future educational training which could relate to new site job classifications.
(d) a more cohesive servicing unit with responsibility for the maintenance of the complex and extensive electrical and instrument technology on the site.

HISTORY

In the past the standard Company practice had been to rely on the foundation of knowledge and skills developed through the traditional electrical or instrument apprenticeship and then support such development with "in house" training. Whilst the standard of the "in house" training is not in question a major problem became apparent with respect to the varying levels of the employees knowledge and skills brought about by a number of factors which were difficult for the Company to control. The major factors contributing to the problem were:

(a) the length of service of the employee had with the company,
(b) the opportunity the employee had to participate in training programs which often was controlled by company manpower levels and service commitments,
(c) the level of knowledge and skills the recruited tradesperson brought to the company; and
(d) the self development of the individuals through external study.

To address these problems the company decided it was imperative to embark on an educational and training program which would support the workforce in handling evolving technology into the 21st century while at the same time maintaining continuity of operation.

As a consequence in 1986 a decision was made by company management to initiate steps that would eventually lead to the amalgamation of the work roles which up to that point had been specifically identified on site as either that of the electrical or instrument tradesperson. Traditionally, on the Botany site the two trades:

(a) were covered by different unions.
(b) were located in different workshops.
(c) had separate supervisors.
(d) did not interface effectively in their primary role as service units for the company plant; and
(e) there was no defined career path as promotion was usually based on length of service there was no incentive for staff to acquire what could be termed "additional skills".

With the development of new technology in the chemical processing industry the company, whilst not experiencing major problems with demarcation, was acutely aware of the difficulties it could face in the future with the blending of technological concepts and techniques. The amalgamation decision was taken after identifying potential problem areas with respect to the installation and servicing of new processing plant which was currently being installed or that which would be installed in the future. The areas of concern of which the company identified as being of high priority were:

(a) the ability of it's workforce to service new technology,
(b) the educational preparation required for it's workforce to address the complexities of the new technologies and related techniques,
(c) the need to enhance job satisfaction of the workforce; and
(d) the need to provide a structured educational path to encourage technological development of the workforce.

In mid November 1987 after consultation with the workforce the company decided to approach the Department of TAFE for assistance. It was requested a training package be developed for all electrical and instrument apprentices and a different training package be developed for the electrical and instrument tradespersons on site.

Both ICI and TAFE agreed on the feasibility of the project. TAFE through the School of Applied Electricity immediately started the development of a long form syllabus. This was completed by the end of December 1987 and presented to the workforce for consideration.

After lengthy discussion between the company and workforce the tradespersons requested that they be allowed to participate in a similar programme to that proposed for apprentices. This immediately provided ICI with a different set of parameters to work within for it meant:

(a) the revised package was twice the length of the original proposal for tradespersons.
(b) the company would be required to increase the funding commitment substantially. Particularly if the educational package of the project was still to be presented on site.
(c) the on site training component of the package would have to be prescribed and regulated, and co-ordinated with the educational component of the program so as to comply with Statutory provisions of the relevant Acts covering this industry.
(d) At the completion of the program the company would have developed a workforce with a broader base and more comprehensive foundation of skills and knowledge for which it could address technology in the future than with the previous proposal.

The company decided the tradesperson's request had merit and asked TAFE to cease the development of the original proposal for tradespersons and to consider the feasibility of all employees in these two trades working within the framework of the proposal for the apprentices.

TAFE and ICI agreed to conduct both the Electrical Trade and Instrument Trade Courses on site for tradespersons. In doing so was necessary to consider and discuss such significant topics as:

(a) articulation.
(b) credit for on site training.
(c) awards after course completion.
(d) subject sequence.
(e) subject assessment.
(f) facility requirements.
(g) facility management.
(h) student attendance patterns.
(i) TAFE responsibilities.
(j) ICI responsibilities.

It was also essential to ensure that the quality of the course offering in the annexes was at least equal to that in conventional classes conducted in Colleges.

IMPLEMENTATION

The educational packages were designed so that, at the successful completion of either course for electrical or instrument tradespersons, participants would receive the appropriate trade course certificate. The context of each course was finalised after considering the normal articulation process between the Electrical and Instrument Trade Course within TAFE, the in house training programs ICI had conducted and the industrial experience gained as a result of the tradesperson's participation in on site plant servicing. After appropriate exemptions had been decided and the course subjects finalised, ICI and TAFE then developed a co-ordinated program, which keyed the sequence of subject presentation of the course with the on site training programs to be conducted by ICI.

As all subjects were existing TAFE subjects normal assessment procedures of the School applied in this case.

Once an agreement had been reached between ICI and TAFE on the presentation of the educational component of the project it was decided the most simplistic form of management which met both the requirements of ICI and the regulations of TAFE was to annex the proposed site facility set aside for TAFE use to the College providing the teaching resource for that facility. However, the overriding consideration to this operation was that all persons from TAFE were still bound by the strict safety code of ICI when working on their premises. All teachers were safety trained to ICI Standards.

ORGANISATION OF EDUCATIONAL TRAINING

ICI and TAFE developed the sequencing of subjects for the two trade courses, particularly the electrical trades content so the educational and training sections of the program would enable the participants to gain the maximum rewards from their involvement. It is important to note that other organisations were consulted in the development so participants could be guaranteed recognition for their level of competency. Of particular note was the Department of Energy's involvement providing guidance and advice in the design of the training programs for the instrument tradesperson so they may apply for an Electrician's Licence. Interestingly, from this involvement a log book has been designed for prospective licence applicants to assist in the completion of details covering their practical wiring experience. Since the introduction of the log book a number of other companies are using it for both apprentices and tradespersons.

Also ICI and TAFE formed a committee that meets regularly to discuss progress of the educational package development and its implementation, endeavouring to resolve problems as they occur. This Committee plays an important role in keying in the educational and training package such as evaluating company specific equipment for use as an educational resource and the development of contingency plans to overcome unforeseen circumstances.

Two teaching annexes were developed on site because of the different mode of presentation of the courses and the nature of material covered in the subject. An existing building was converted into the facility for the electrical course whilst a demountable building was purchased for the conduct of the instrument course. Personnel from both TAFE and ICI worked together to establish the two facilities in an endeavour to meet the deadline set down for the beginning of the program. Whilst the educational facilities were being developed a number of important issues had to be resolved. This meant negotiations taking place on a number of fronts and all being keyed and co-ordinated into making the project a cohesive package.

Because of the tight time frame the two facilities were required to be completed within five weeks, the electrical section was occupied one week after the deadline however the instrument section could not be used for two months after the desired date. This delay was mainly due to the failure of suppliers to supply equipment on time, to overcome these delays the trade persons were transported to a TAFE College so the program could be completed within the agreed time frame of two years.

INDUSTRIAL ISSUES

ICI had to address a number of industrial issues and a working party was formed consisting of the Training Manager, two foremen and a representative from each of the electrical and instrument trade groups. This committee discussed a range of industrial issues including:

(a) change in attendance patterns of the workforce on site resulting from attending the TAFE facility one day per week.
(b) TAFE's compulsory assessment procedures.
(c) industrial action on days of attendance at the TAFE facility.
(d) taking of annual leave during the course time.
(e) operation of the call in emergency system during the duration of the TAFE semesters..
(f) employees being called upon to work during TAFE course time; and
(g) student resources required for the course.

The outcome of the discussions were that the Committee developed and presented an industrial package to both ICI and the tradespersons for discussion this package was agreed to and signed by both parties on the understanding that the committee could be reconvened at anytime to discuss matters relating to this project.

PARTICIPANTS PROGRESS

Throughout all the discussions the major concern was the ability of the participants to handle the program. There were fifty tradespersons whose ages ranged from twenty three years to fifty eight years some of whom had not bothered with text books for over twenty years and sixteen apprentices who were being asked to increase there attendance at TAFE by 100%. Of major concern was the apprentices because of the increased educational commitment being placed upon them. Such concern was not warranted as after two semesters they demonstrated an ability to handle the increased load.

On the other hand the tradespersons have exhibited anxiety and apprehension probably because they were experiencing a medium which they had not been in for some time and their performance was now being measured through the normal TAFE subject assessment procedures. Most of the anxiety and apprehension occurred whilst the tradespersons were taken out of their work environment and placed in a TAFE College. Once the facilities on site were commissioned and classes established on site the tradespersons appeared to be far more comfortable in this environment.

To support the educational and training package ICI developed a network of tutors within their industrial site so those persons involved in either of the courses could call on others in the field in which they were cross training for assistance. Whilst the primary role of the tutoring network was to assist one another, a secondary function was a closer linking of the two groups of tradespersons. This had the added advantage that the possibility of tensions and frictions in combining of the groups was greatly reduced.

NEW CAREER STRUCTURE WITHIN COMPANY

With the establishment of the cross trade training program well underway a joint working party committee was established to investigate career paths for tradespersons within the company. The proposal from this committee, after extensive investigations into the current technological needs on site, the company's ability in conjunction with TAFE to develop and provide on site training programs to suit those needs and the current availability of existing TAFE courses from Trade Certificate through the Associate Diploma courses was for a four tiered career structure to be introduced for the electrical and instrument workforce.

The career structure agreed is as follows:

(a) Industrial Controls Tradesperson - Level one.
(b) Industrial Controls Tradesperson - Level two.
(c) Industrial Controls Tradesperson - Level three.
(d) Industrial Systems Tradesperson.

The transition between the levels is dependent upon the person concerned achieving specified levels of competency.

CONCLUSION

This ambitious program is now in it's second year and is an example of an industrial company such as ICI Australia Pty Ltd working closely with TAFE in building a solid foundation of knowledge and skills to address present and future technology within industry. Of significance was the ability of both parties to respond to the opportunity of introducing a program of this nature when it arose and the interest other major companies have shown in participating in a similar program.

The co-operation between industry and TAFE in New South Wales has provided the industries within the State with the opportunity to confidently plan the introduction of new technology.

WHAT DO THE UNIONS WANT FROM TAFE?

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INTRODUCTION

Industry has a long-standing and valued input into educational institutions in Australia, particularly into the TAFE sector. Much of this input has been by way of advisory committees and councils which, in NSW anyway, have been in existence in one form or another since 1914. The unions, together with employers, have had an important place on these committees and councils, and it is with this subject I mainly wish to deal in this paper. Essentially what I wish to argue is that both unions and employers have been less concerned with narrow sectional interests than is commonly represented, and that this has precedents reaching far back into the history of technical education in NSW - traditionally the primary means of skills acquisition in this state. I will largely concentrate on the metals and engineering industries (though reference will be made from time to time to other industries).

HISTORICAL BACKGROUND

As mentioned, the forerunners of the present-day advisory committees and councils in the NSW TAFE system came into being in 1914. This was in connection with a substantial reorganization of technical education in this state at the time by the Holman Labor government in consultation with various interested groups, including the unions. As was explained by Peter Board, Under Secretary of the NSW Department of Public Instruction (of which Technical Education was but a Branch at this time) in November 1913, advisory committees were to be set up following invitations to "the different societies or associations of employers and employees in each trade to send representatives to discuss the matter with the Acting Superintendent [James Nangle, Superintendent from February 1914] and myself" (Board, 1913, 6). Board goes on to explain that the invitations were "most readily accepted", and the end result was that it was "unanimously agreed that the co-operation of both masters and men engaged in the different trades would be necessary to the proper working out of different courses of instruction", which co-operation was to be ensured by "the establishment of Advisory Committees [to be] comprised of two representatives nominated by the Employers' Society, two nominated by the Operatives' Society, with such members of the College Staff as the Superintendent might deem necessary" (Board, 1913, 6-8).

The response to these invitations seems to have been almost too overwhelming. In July 1914 Board received a letter from the Secretary of the NSW Amalgamated Sheet Metal Workers' Society stating that a Mr. James Anderton had been "elected to represent the Society on the Trades Advisory Committee" (ASMW, 1914). On enquiry Board was informed that "No invitation was sent to the Amalgamated Sheet Metal Workers' Society in view of the fact that we were not in a position to require the help of a representative. Perhaps towards the end of the year provision can be made for receiving a representative" (Nangle, 1914). This does not appear to have materialized, but in any event, by 1917 five unions in the metal trades were being represented on the advisory committee for courses in the Engineering Trades school at the Sydney Technical College, viz., the Federated Society of Boilermakers and Iron Ship-builders, the Moulders' (Metal) Union, the Amalgamated Society of Engineers, the Australasian Society of Engineers and the Blacksmiths' Society of Australasia. This represents half of the organizations listed (TEB, 1917, 71).

The system of advisory committees seems to have worked very well. Throughout his long tenure as Superintendent (1914-33), Nangle had a good working relationship with the employees' representatives on the committees, who were his allies in his constant battles with the Department over funding. In 1931 the first moves towards what was eventually to be the creation of a separate Department of Technical Education (finally achieved in 1949) were actually made by members of the advisory committees, who wrote to the then Minister (William Davies) asking, among other things, that:

> the Minister for education be urged to take immediate steps to place the State system of technical education wholly under the control of the Superintendent of Technical Education, who should be made directly and only responsible to the Minister for Education (TAFE, 1983, 70).

These kinds of demands for an improved status for technical education in NSW found a receptive hearing with the incoming Minister, David Drummond, who took over the portfolio in 1932. The following year a Technical Education Commission was set up to enquire into all facets of the system, and all interested parties were again invited to make submissions. The unions again readily responded, among them being the Amalgamated Engineering Union (AEU; the old Amalgamated Society of Engineers, renamed in 1920), who, firstly, followed up the above recommendation with another that "the Technical Education Department be separated from the Education Department, and have access to the Minister for Education through the Under Secretary" (AEU, 1934).

A second suggestion by the AEU - "That the Junior Technical Courses [i.e. those run in the Technical High Schools, as at Wollongong] be co-related to the methods and practices as applied in the Technical College, in order that it may be a help to the Juniors when they pass on to the Technical College" - can, as will be further evident below, be seen as reflecting an on-going concern for career-path opportunities in the metal trades.

An immediate result of Drummond's investigations was, firstly, a confirmation of what was seen as the important place of the advisory committees in technical education in NSW. As the Minister's Report on Technical Education for 1937 reads: "Co-operation has been greatly assisted by the work of ... Advisory Committees. The latter ... consist of representatives of employers and employees, nominated by their respective associations and unions ... [These Committees] have made possible the better articulation of courses of instruction with local industry" (Drummond, 1938, 18-19). Another result was the establishment, in 1936, of advisory councils in connection with the Sydney and Newcastle colleges, and district advisory committees at Broken Hill, Wollongong, Lismore and Goulburn (later extended to a number of other centres). As in earlier years, the metals unions maintained a strong presence on the committees: in 1937 they were represented by the AEU, the Australasian Society of Engineers, the Blacksmiths' Society, the Federated Society of Boilermakers and Iron Ship-builders, the Moulders' (Metal) Union, the Plumbers and Gasfitters' and the Federated Shipwrights, Ship Constructors, and Boat Builders' Association (TEB, 1937, 20-1). Among the members of the first Sydney Technical Education Advisory Council were John Nimmo of the AEU, Donald Black, representing the Electrical Trades Union, Vernon Jarvis of the Blacksmiths' Society and James Goudie of the Timberworkers'. E.S. Ritchie, President of the Technical Teachers' Union, was also invited to join the council's inaugural meeting, on 3 June 1936 (TEB, 1936a, 1936b).

The Second World War diverted attention from the Branch's administrative details for a time, but with cessation of hostilities in 1945 the subject was again looked at - technical education having demonstrated its invaluable contribution to national effort during the war - and ultimately a Technical Education and New South Wales University of technology Act was passed setting up the Department as a separate entity in April 1949. A few changes were made to the district councils but the advisory committees, formally recognised under this same Act (DTE, 1960a, 230-1), continued much as before. In fact, until 1986, the advisory committees had much the same form as their original progenitors of 1914. Their contribution to the effective working of TAFE in NSW (the Department's present name was adopted in 1974) has been valued by the Department itself, by government and by industry. And the unions have continued to play an active part on these committees, as will be seen shortly.

Besides this formal input, a number of unions have been actively involved in the work of local colleges in other ways as well, such as awarding prizes to the more outstanding students - in 1960 at the Granville Technical College for example, the Building Workers' Industrial Union, and the Operative Painters and Decorators' Union awarded prizes (Parramatta Advertiser, 30 June, 1960).

ADVISORY COMMITTEES IN RECENT YEARS

Yet in 1986 the committees in their old form were discontinued. While school committees still have a place in TAFE, it is a much reduced one compared with the old course committees. It is not at all clear why these changes have been made - perhaps it has simply been a matter of the steadily growing professionalism of NSW TAFE's curriculum development section - but whatever the case, the unions, at least the metal unions, are not happy with their reduced participation. Greg Harrison, Assistant National Secretary of the AMWU even put it to me: "The present system doesn't work at all". To illustrate how important the course committee meetings were to the unions as a forum for airing some of their ideas on a range of issues now very much in the public arena - multi-skilling for example, and creation of career paths, etc. - it is perhaps worthwhile looking at some examples of the kind of discussion which was going on at the meetings in the last few years of their existence.

A foretaste of the metal unions' current pace-setting agenda for the restructuring of industrial awards based on "skills accords" (Ford, 1987a, 6) - which has just recently (December 1988) been adopted in principle by the ACTU - was contained, for instance, in the following exchanges at meetings of the Metal Fabrication Trade Course and Welding Course advisory committees in September and October 1981. At the first meeting, a Mr. L. Brown, from the NSW Public Transport Commission, expressed concern that the name of the first of these two courses was "not appropriate", and that it should be 'Boilermaking' since "the duties of a boilermaker are well known in industry, both by employers and employees". The Chairperson of both these meetings, Mr. G. Smith, Head of the School of Engineering Trades, explained that such a reversion to an "old name" would be misleading since the course was designed as a merger of Welding and Boilermaking; and a Ms. Heys from TAFE's Curriculum Services Division, pointed out that the name of the trade certificate was Boilermaking anyway, and questioned whether the name of this one course was all that important. The view of Mr. Brian Beer, the Amalgamated Metal Workers' and Shipwrights' Union's representative on the committee (the AMWSU - now the AMWU - was formed in 1972 through an amalgamation of the AEU with a number of the other unions mentioned above) are worth recording in full for their significance in terms of his union's later more widely known emphasis on core curricula and multi-skilling:

> Mr. Beer advised that the Amalgamated Metal Workers' and Ship Wrights' Union has made a decision that it would fully support the Metal Fabrication Course as being in the best interest of apprentices and providing apprentices with the best all-round training as far as the trades are concerned. He felt that as the course incorporates Boilermaking and Welding the Union would not be able to support the reversal of the name of the Course to Boilermaking, as it would then exclude those persons doing the Welding strand (TAFE, 1981a, 7-8, my emphasis).

A related question was raised at the Welding Courses Advisory Committee meeting in October by a Mr. J. Moyes, from the Lincoln Electric Company (Australia) Ltd. Mr. Moyes said that he was concerned about "the present trend where students are continually opting for the Metal Fabrication Strand" when there was an acute shortage of welding tradesmen. In reply, Brian Beer reiterated his union's stand that it give "preference to the Metal Fabrication Trade Course in view of the all-round training it offers so that apprentices are not restricted to a particular section of the trade". Beer went on to point out that students in this course spent much of their time on welding, and that in any case "most welding employers expect their apprentices to undertake not only welding jobs but some metal fabrication work as well". Beer's remarks were "reinforced" by Mr. Smith, who explained that the course *as described in his School's report referred to combined classes of Metal Fabrication* and Welding Trade students. Also, interestingly, at this meeting (in terms of the AEU's 1930s interest in trades preparation courses, and both the AMWU's and NSW government's current concern to see closer links between secondary school curricula and trades training - see below), Mr. W.A. Nancarrow, head of the Division of Welding in the School of Engineering Trades, explained that the NSW Department of TAFE had "progressively become involved in transition education". TAFE's Transition Unit, for example, had recently launched a welding-oriented engineering training programme at Dapto for a group of unemployed young people. Nancarrow pointed out that "besides some elementary welding skills, students were taught other skills such as 'Communication', etc." with a view to making "the student a better prospect for employment opportunities as 2nd or 3rd class welders which will indirectly assist the industry on the one hand and also high unemployment areas could be better served" (TAFE, 1981b, 4-5).

At a meeting of the Patternmaking Trade Course advisory committee in November 1984, a Mr. R. King of the AMWU argued, in response to Mr. P. Wright's (assistant to the head of the Engineering Trades School) advice that an increasing number of firms were installing CAD/CAM technology in connection with patternmaking, that a post-trade course in this technology, if provided, should "be open to all metal industry tradespersons, if they have the capabilities to extend themselves to go into the next stage". With regard to the question of standardising courses, King contended: "[I]f the Apprenticeship system throughout Australia is to be the same and taught the same training, then there must be national core courses ... [I]t is a matter of getting every State together so that basic patternmaking is the same" (TAFE, 1984a, 7-8).

YOUTH versus ADULT TRAINING

In a recent article Richard Curtain (1987) maintains that "[t]he unions have ... insisted on the retention of a youth apprenticeship system", and on the next page of his article, that "the trade union movement has staunchly refused to agree to the introduction of adult trade training" (Curtain, 1987, 31-2). This might have been true to a large extent in earlier years (and with some unions more so than others), but that it is not the case with the metals unions today is sufficiently demonstrated in the AMWU's document, Award Restructuring: Guidelines for Organisers, recently published in agreement with the Metal Trades Industry Association (MTIA). On page 43 of this document it is explicitly stated: "Adult apprenticeships are one step in developing a training path along which a skilled non-tradesperson can pass into an engineering stream of an award career path structure". The concept is clarified somewhat further down the page as follows: "An adult apprentice shall be indentured for a period of four years or less where approved credits have been obtained for training modules undertaken previously either within the steel industry or other relevant area". Moreover, the union's demand (currently before the MTIA) is that "where a person was employed in an industry immediately prior to becoming an adult apprentice such person shall not suffer a reduction in actual rate of pay by virtue of becoming indentured" (AMWU, 1988, 45).

The implications of this plan for TAFE are enormous. A key point in the AMWU's award restructuring programme is that recognition be given for skills gained on the job without formal certification. As is explained elsewhere in the latter document: "Many workers, through on-the-job experience or in-house training have developed skills which equal or exceed those needed to enter a new classification. In order not to disadvantage workers who hold skills for which they have no certification, it will often be necessary for the training committee, or organizers and plant management to carry out a 'skills audit' or 'skills needs' analysis" (AMWU, 1988, 24). That is to say, the new system would allow trade qualifications to be awarded once certain levels of skill were reached. For example, an adult who has been working in the engineering trade for some years, say in welding, but who has no formal trade qualifications, may be reluctant to undertake a four-year adult apprenticeship but may not at all object to attending some welding courses at a TAFE college to supplement accreditation for skills already attained. As I say, this would appear to have far-reaching implications for TAFE in terms of the potential for increased utilization.

Perhaps it is unfair of me to criticize Dr. Curtain on the basis of a document not yet published at the time of publication of his article. Nevertheless, evidence of this interest in adult skills acquisition among the metals unions can be found in various earlier sources, for example in the minutes of TAFE advisory committee meetings. Thus, at the meeting of the Welding Courses advisory committee in October 1981 cited earlier, Mr. Brian Beer explained that while the AMWU did not wish to see an *abandonment* of the traditional apprenticeship system, this "[did] not mean that the Union is against the introduction of training for adults in welding". Beer also stressed that it was his union's opinion that trainees "should enrol in the welding course at a technical college if they want to get recognition by the Union" (TAFE, 1981b, 7).

This concern by the unions that their members have opportunities for advancement in their trade, whether or not they had had the opportunity to gain formal certification through the traditional apprenticeship system, is not new. In February 1914, at the time of Peter Board's announced reorganization of technical education in NSW, the General Secretary of the NSW Amalgamated Railway and Tramway Service Association (Claude Thompson) wrote to the then Minister of Public Instruction (A.C. Carmichael) voicing objection to one of Board's plans, which was that admission to trade courses at the colleges should be restricted to apprentices. Thompson wrote:

> Many of the best tradesmen have never been formally apprenticed to their trades - Mr. Commissioner Piddington [who had headed a Royal Commission on apprenticeship two years previously] says the apprentice system is in a state of decay - but are nevertheless competent, intelligent workmen, who have in many instances improved their knowledge at Technical Schools. At the present time in the government service alone there are many men working as assistants to tradesmen who, with a little additional technical knowledge - acquirable at the schools - would be competent tradesmen. ... Whilst recognizing the excellent work you are doing in improving the educational facilities of the State, my association ventures to think that the regulation objected to might well be re-considered with a view to its modification. As it stands at present, it seems to be an embodiment of the once a laborer [sic], always a laborer doctrine, which is vicious in principle and pernicious in operation (ARTSA, 1914).

Notwithstanding the supposed abolition of this restriction in the 1930s (under the Drummond reorganization), it seems that it still essentially operates today. In the July 1888 issue of the Federated Ironworkers' *Labor News* there is an item which reads as follows: "Technical and Further Education (TAFE) Colleges that provide competence training in the non-trade skills area last year gave preference for places to tradespersons and above ... *[A]t one Sydney TAFE College alone, over 400 people were knocked back from enrolling in riggers' courses*" (emphasis in original).

It is interesting to compare Thompson's views of 70 years ago with those recently expressed by Mr. Bob Marshman, Deputy Secretary of the Department of Industrial Relations, who said that what we are seeing the beginnings of in the current award changes is "the eventual dropping of apprenticeships" (Marshman, 1988). Greg Harrison, likewise, has assured me that while he expects traditional apprenticeships to continue into the foreseeable future, these will be increasingly supplemented by traineeships and adult apprenticeships.

AMALGAMATION versus DEMARCATION

But it is true that many unions (there are currently some 326 in Australia) have been slow in accepting the kinds of changes envisaged by the metalworkers. The most destructive effect of such attitudes has been the demarcation issue which has so frequently bedevilled Australian unionism in the past. Just how trivial these disputes could be is illustrated in the following example, which is taken from the AEU, Australian Section's Monthly Journal and Report of March 1943: "On January 26 and February 4, in Sydney, Mr. Commissioner Morrison dealt with a demarcation dispute which had arisen between the Plumbers' Society and the Amalgamated Engineering Union over butt welded suction pipes. After argument the Commissioner held that the work in question was similar to work on solid drawn section pipes and that it was work for engineers". As Professor Bill Ford, from the University of New South Wales' Programme in Organizational Behaviour has argued: "[T]he unions need to re-evaluate the costs of demarcation disputes. ... Demarcation barriers severely limit the opportunities of individuals and groups to broaden and deepen their skills. In the long run, demarcation disputes may confine people to such a narrow band of skills that they will be made redundant by technological change" (Ford, 1987a, 7). What Professor Ford is referring to here was dramatically illustrated recently by Senator John Button, Minister for Industry, Technology and Commerce, in an address on the 'Implications for Australian Education of the Reconstruction of Industry', who described how he could remember in Melbourne in the 1960s "every second taxi-driver seemed to be a metalworker who had no other alternative for change in his life - no choice" (Button, 1988).

It has to be admitted that TAFE advisory committee meetings have not been immune from this problem either. At a meeting of the Sprinkler Fitters Trade Course advisory committee in April 1984, to take one instance, where the subject of possible post-trade courses in roof plumbing, gas services, mechanical services, waste disposal services etc for sprinkler fitters was being discussed, a Mr. P. Lane from the Plumbers and Gasfitters union "foreshadowed that there might be conflict and demarcation problems in industry if students entered into areas of multi-skills" (TAFE, 1984b, 4).

But nobody is more aware of the demarcation problem than the unions themselves. The Metal Trades Federation of Unions' Draft Proposals of March 1987 for a new agreement with the MTIA listed "demarcation disputes between unions" as one of the "barriers" which must be overcome if Australian manufacturing was to "attain the levels of efficiency necessary to be able to compete successfully in the international marketplace" (MTFU, 1987, 26-7). And amalgamations are seen as part and parcel of this multi-skills push by the metals unions. Amalgamations - which are welcome to both the more progressive unions and industry (since they do away with demarcation disputes and facilitate negotiations) - reflect the breakdown of craft divisions wanted by people like Laurie Carmichael, a former Assistant National Secretary of the AMWU and now occupying this position with the ACTU. As George Campbell told a meeting of AMWU shop stewards in Sydney in March 1988: "The 348 classifications in the current Metal Industry Award cannot be transferred to the new [restructured] Award. The new Award needs to contain a minimum number of classifications [9 are envisaged] which should reflect the broad-banding of existing skills, and the technical knowledge, experience and skills required for working with new processes and technologies" (Metalworker, April 1988).

Some thinkers in the union movement, people like Laurie Carmichael, see Australian manufacturing's current malaise as reflecting, in part, even deeper divisions in Australia's workforce, between manual and 'intellectual' workers, and that this in turn stems from a long-standing and deeply ingrained condescending attitude towards manual work by educationists - people who were not successful at school did the latter and required 'vocational' education (as in technical colleges), rather than general education. Unless we learn to overcome this attitude, says Carmichael, we will never be able to compete with the Japanese, for example, who have no such impeding traditions (Carmichael, 1988. See also Ford, 1987b; Pavitt, 1986). To Carmichael, this division, or dichotomy, is a false one. He explained what he meant at a 'Futures for Public Education' conference convened by the Australian Teachers' Federation and the Commission for the Future earlier this year (1988):

> Lets look at the issue of 'general versus vocational' education. ... The danger is that we keep addressing the problem in terms of the past two hundred years, where vocation was more and more connected with infinite division of labour and the breakdown of skill. In our very lifetime we have lived through one of the great historical reversals. Expressly, instead of the infinite division of labour, the requirement is now multi-skilling. The requirement now is to see broad education as the fundamental requirement for industry...
>
> The new forms of work organisation that emerge from these skill requirements pose the necessity for overcoming the dichotomy between broad education and vocation. It impels companies to say for the first time that they genuinely need inter-personal skill. They need communication, they need the ability for people to be able to adequately communicate with each other in such a fashion that the new relationships established in the course of production can function. ... These inter-personal skills will in their evolution demand increased humanism that goes with the necessity of understanding human personality in all of its various forms... (etc.)" (Carmichael, 1988, 13).

IMPLICATIONS: A SUMMING UP

As noted earlier, 'communications' was one of the skills mentioned by W.A. Nancarrow, head of TAFE's Welding Division in the School of Engineering Trades, as being taught along with welding to unemployed young people at Dapto (south of Wollongong) as part of a transition course between what they had learnt at school and what they might continue on with learning at a TAFE college. Such developments can be seen as reflecting, to some extent at least, the ideas of people like Carmichael and others in the union movement who would like to see closer links between 'general' education in schools and skills requirements in the workplace.

Carmichael has found an unexpected ally in his views in NSW in the person of Dr. Terry Metherell, Minister for Education in this state, who has made it clear that he would like to see an expansion of what is currently an experimental joint TAFE-Schools program. Under the present program, students in the last year of high school can undertake 'other approved studies' for which recognition is given by TAFE. But what Dr. Metherell would like to see is greater 'status' granted for these courses - such as inclusion in the HSC result; this would almost certainly result in the expansion envisaged by Dr. Metherell. Interestingly, what we appear to be returning to here is something like the old technical high schools mentioned above in connection with AEU's suggestions to the Drummond Commission in the 1930s.

All of this has obvious enough implications for TAFE in terms of the need to develop broader courses than is currently frequently the case. But how are TAFE's curriculum policy people going to know about precisely what is required? As Bob

Marshman explained recently in his paper referred to earlier (Marshman, 1988), educational authorities need to "get alongside of" the rapid developments in award restructuring, otherwise they run the risk of "being left behind". This is where advisory committees can play a vital role, as they have done in the past, especially in the metals industry area. Metal industry employers, through their collective representative body the MTIA, would seem to be at one with the unions on this. In a joint MTFU/MTIA proposal submitted to the Australian Council for Employment and Training in April 1987, the view was expressed that "Effective systems of communication and co-operation must be established between the industry and TAFE on future training requirements related to new technology in the workplace" (MTFU/MTIA, 1987, 7). As mentioned, the unions still have some input into the TAFE school advisory committees, and I am assured by a TAFE spokesperson that "every" College Committee (advisory bodies which function at the local college level and which evolved from the old District Committees) has trade union members. This is all worthwhile and appreciated by the unions, but a return to the course advisory system would allow closer collaboration and fine tuning of courses in line with the reconstruction of Australian manufacturing in which the unions are taking such a leading role.

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THEORY BACKGROUNDS AND RESEARCH EVALUATION OF AN INNOVATIVE PROGRAMME OF PROFESSIONAL STAFF DEVELOPMENT IN THE INTERFACE BETWEEN EDUCATION AND ECONOMY

DR BARRY ELSEY, SENIOR LECTURER: HUMAN RESOURCE STUDIES

CENTRE FOR HUMAN RESOURCE STUDIES,

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This paper deals specifically with a research evaluation project funded by the Manpower Services Commission MSC (to 10k for the total project cost of 465k) of a professional staff development scheme for secondary school and further education lecturers. The scheme was entitled TRIST and was the staff development aspect of a major piece of curriculum development spearheaded by central government - Technical and Vocational Education Initiative (TVEI) Most Local Education Authorities (LEA's) incorporated TVEI and TRIST into their educational programmes in secondary schools and further education colleges on the understandable pragmatic grounds that the MSC provided much needed 'pump priming' funding for curriculum development, staff training and supply cover, etc.

As well as dealing with the research evaluation methodology, and some general observations arising from TRIST and its impact, it is necessary to explore the theory and contextual background of this example of modern thinking about professional staff development as its ideological as well as pragmatic nature is of significance in forecasting the future directions of educational policy in the UK.

Passing reference should be made to the underlying political economy values, of which TVEI represents the educational policy and practice thinking for young people and TRIST for adult and continuing education and professional staff development in particular. These ideas are expressed through what I call the work training model.

Underlying Thinking of the Work Training Model

a) the need for know-how for productivity and efficiency is imperative to attain economic market competitiveness with major rivals.

b) developments in knowledge of scientific and technological processes applied to economic production grows at a fast pace and to lag behind risks a lack of competitiveness.

c) structural changes in the economy and the occupational structure are a necessary part of arresting and reversing economic decline and slack trading.

d) in relation to all these changes it is vital to improve the efficiency and effectiveness of labour through employment policies generally and specifically the training and re-training of workers throughout all levels and sectors of the occupational structure.

e) training should be regarded as a universal necessity, comprehensively provided on a continuous or recurrent basis throughout the work life cycle, starting with initial schooling and leading naturally into adult life.

f) the assumption of these related ideas is that there is a deep seated understanding and consensus, expressed as a partnership, between the interests of capital (the State, capital owners and employers), labour (employees or workers and their dependents) and the nation as a whole (consumers and the inter-dependent populace) for the purpose of economic productivity and the functional necessity of societal development.

g) these major values rest on the belief that societies are necessarily cohesive and this is expressed through the legitimacy of hierarchical power and authority and natural inequalities.

Much of the thinking forms the practical basis of economic rationalism which in recent years has replaced social welfare as a main philosophical plank in political democracies of industrialised societies. In this modern philosophy, which in fact derives some of its thinking and values from classical capitalism, social welfare is seen to take energy and resources from the main task of government, which is to increase the productivitiy and growth of the economy. Economic rationalism argues that more attention has to be paid to the foundations of the productive system (the reproduction of capital and labour resources) than the infrastructure of human needs services. The strength of the former is seen as the determinant of the latter. Expressed another way a front line commitment to welfare, beyond a base line minimum for social order purposes, is regarded as an inflationary pressure and a diversion of resources away from more fundamental priorities.

The consequences of economic rationalism on education and training in the UK have been fourfold:-

The Consequences of Economic Rationalism on Education and Training

a) a sharp reduction in the resource allocation from government.

b) a greater emphasis on education as a product to be sold as any other consumer good in a free market.

c) a shift in the burden of costs to the consumer - the user-pay principle.

d) a re-directing of emphasis in the curriculum and in teaching/learning to instrumental concerns - the new technology, economic enterprise and work related skills and 'relevant learning'.

The curriculum development policy of TVEI and professional staff development ideas of TRIST have grown out of the last item (d). Details of this will appear throughout the rest of this paper.

There is sufficient background on the ideology and theory basis of TRIST to give the project a suitable context. Attention turns now to the basic ideas of TRIST, programme descriptions and other features, before summarising the research evaluation approach and some key findings.

The best way to describe TRIST is to summarise some of the original publicity sent out to participating staff and organisations.

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2"The TVEI Related In-Service Training Scheme (TRIST) is a new national initiative, funded by the MSC to stimulate additional in-service training and professional development within LEA's. It is an interim scheme for two years (1985-87) and will establish the first stage of the implementation of the new arrangements for in-service training generally" (late called GRIST - grant related in-service training and characterised by a high level of policy and content direction by the Department of Education and Science (DES)).

TRIST was designed to support staff in schools and colleges and help them respond quickly and effectively to the rapid changes in curriculum development, especially the need to promote new technology, different modes of assessment and the need for a more enterprise culture for a changing economy. More specifically the aims of TRIST were to:-

- stimulate new developments in schools and colleges and assist in the management of change
- promote the effective use of educational resources
- provide opportunities for the exchange and dissemination of expertise and ideas within and across institutions
- develop the working relationship between education and industry
- promote the development of school-focussed INSET
- to assist teachers in designing the relevant curriculum to meet the needs of:-
    - students of all abilities, institutions and industry
- provide opportunities for staff to explore new approaches to teaching and learning
- envisaged in particular by TVEI, eg practical, non-didactic, non-directive pupil centred learning, that is relevant to working and adult life and encourage equal opportunities.

TRIST programmes were designed to address three major categories of in-service training need:-

Management and Development of the Curriculum
Cross Curricular Themes
Subject Based Developments

Each main area sponsored a variety of more specific programmes shown in the summary below:-

Areas of INSET Need

PROGRAMME CATEGORY	MANAGEMENT & DEVELOPMENT OF THE CURRICULUM	CROSS CURRICULAR THEMES	SUBJECT-BASED DEVELOPMENTS
A	The Relevant Curriculum		
B	Vocational Education		
C	Management 14 - 18		
Q	Training Trainers		
D		Active Learning	
E		Computer Curriculum	
F		I.T.	
G		School-Based INSET	
H		Counselling	
I		Assessment & Profiling	
J		Education/ Industry Liaison	
N		Personal & Social Development	
V		Special Needs (FE)	
P		Equal Opportunities	
K			Physical Sci/Tech Int.
L			Design Technology
M			Business Technology

TRIST RESEARCH METHODOLOGY

What largely determines the nature of a contracted research evaluation project are the requirements of the paymasters, in this case the MSC through the agency of the LEA and the TRIST management group. Actually the requirements were rather open, being no more than an overall assessment of training effectiveness. There were no detailed prescriptions as to how the evaluation should be carried out, although senior management of the national TVEI scheme supplied a list of issues they considered important. The research design was largely determined, though, through close collaboration with the TRIST co-ordinator and the management group. The really hard push to produce results arose from the need to issue an interim report. This pressure determined the research design:-

1 an onus on simplicity of design through questionnaire surveys of participants and follow-up group interviews using an open discussion format

2 a reliance on 'mail order', self-completion global surveys delivered through the courier network to schools and colleges

3 complementary use of selected case studies of programmes based on group discussion and summative feedback

4 use of 'in-house' participant evaluations of individual programmes

5 interim reports and feedback discussion with TRIST management group, school and college management (at a conference) the INSET committee for the LEA, advisors and informally with the co-ordinator, course director and course tutors.

All the groups involved with TRIST were surveyed and five programmes were intensively studied:-

GROUPS INVOLVED IN EVALUATION	RESPONSE RATE	SELECTED CASE STUDIES
1 Senior Managers	100%	1 Education/Industry Liaison
2 Programme Leaders	85%	
3 County Co-ordinator	100%	2 Women into Management
4 Course Directors	61%	3 Training the Trainers
5 Course Tutors	52%	4 The Relevant Curriculum
6 Administrators	100%	5 School Focussed INSET
7 School & College Management	78%	
8 Participants	31%	

As the focus of this paper is, first, on underlying ideology and theory of TVEI and TRIST and, second, with the approach and design of the research evaluations project there is insufficient space for detailing the findings. It is useful, though, to outline the structure of the find report where it relates to the findings:-

Part One

Summary of problems and issues identified by TRIST respondents (the basis of the interim report)

Part Two

A) TRIST Management Delivery Perspective involving the perceptions of senior management, programme leaders, co-ordinators, course directors and tutors, administrators about:-

1 initial design and implementation of TRIST,
2 overall strengths and weaknesses of the scheme,
3 management and administration of TRIST,
4 relationship to policy and practice aspects of LEA'S main programme

B) Perspectives on TRIST Objectives by deliverers, participants and school/college senior management

C) Perspectives on the Cascade Principle of Training

D) Perspectives on TRIST Selection Methods and Criteria

E) Perspectives on further professional and training needs arising from the TRIST Experience

F) Perspectives on the benefits of TRIST

G) Reports from in-house evaluations of individual programmes

H) Case studies of selected TRIST programmes.

I) Conclusion and Appendices, etc.

In general terms the TRIST evaluation highlighted the following positive and debit features. First, TRIST was a very competent, professionally conceived and managed enterprise initiative in staff development collaborating well with the objectives of TVEI and MSC. Second, TRIST articulated effectively with INSET policy on needs analysis; curriculum, organisational and individual objectives; and future GRIST arrangements which give greater priority to central government policy priorities and directions in education and training. Third, the lessons emphasised the importance of a good training image, the value of detailed forward planning and the need to 'sell' training through effective marketing, publicity and follow-up. Fourth, TRIST underlined the value of good organisation and management support, programme variety and innovation and, finally, the stimulus effect of raised consciousness, boasted morale and worthwhile learning.

On the debit side TRIST was criticised for being too 'top-down', to hastily conceived and implemented with too much crisis type management and too little, too late for effecting change at the organisational level. Nobody could tell whether it had positively got through to the students and had changed their learning behaviour which was beyond the remit of the evaluation.

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RELATION BETWEEN EDUCATION AND INDUSTRY THROUGH TEACHING GEOGRAPHY AND ENGLISH LANGUAGE

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BULGARIA

The new trends in the education in Bulgaria allow widening of the possibilities to establish a firm and permanent relation among school, social life and production (social life is regarded as a focus of culture and science, and production is the creative material sphere). Having been a teacher in geography taught through English and in English language and now dealing in teacher training I'll concentrate on the subject of how geography and English are taught as to achieve an integration generalized as school-industry.

General characteristics of the Bulgarian secondary schools.

After the so called primary course (between the 1st and the 3rd form, there is an intermediate one - from the 4th to the 7th form, which is followed by a high course - between the 8th and the 12th form. A systematic and a profound study of the principles of science is gained up to the 10th form through the separate subjects. What has already been said refers to the obligatory education. An optional education is introduced during the high course, which finds its accent in the 11th and 12th form. This is a new cnception of the Bulgarian school education and reflects the link between the all-around development of the personality together with its specific gifts and abilities. There are also English (French, German and Russian) language schools between the 8th and the 12th form where the organisation of the obligatory and optional education is similar to that in the Bulgarian schools; the only difference is that some of the subjects are taught through English and the variety of the optional subjects concerning English language is greater. An important requirement to the educative process of the schools in Bulgaria is to establish a close interaction among the separate subjects and between the school curricula and the cultural and productive spheres of life.

Relation between school geography and industry. The school curriculum of geography in the 8th form is about economic and human geography of the world and that of the 9th and 10th form covers geography of Bulgaria. Thus the curriculum creates real possibilities for a relation between school geography and industry because its contents includes a great deal of analysis of the branches of the world or national economy. Almost every settlement has got bigger or smaller industrial units, so the local enterprises that belong to any of the branches (metallurgy, engineering, chemical industry etc.) could be skilfully used in the integrational process school-industry. The preliminary step of the teacher is to gather a profound background information about the local enterprises and to select the ones that serve best for the purpose of the school curriculum and the process of integration. The other step is to plan and organise the corresponding lessons, to look for ideas and resources of educational and integrative importance and to involve specific teaching methods. That also means some of the lessons could be held on the spot of the enterprise - either the summary ones or the ones about different stages of production. Next step is to combine and distribute the tasks, questions and problems to the students so that they can visit the enterprise in workgroups, looking for data and preparing themselves for the final or intermediate discussions. The following groups of problems can be explored by the students so that a whole characteristics of the given enterprise to be obtained at the end:

- raw materials	local and imported (how the ratio between them changes with time); new manmade substitutes; perspectives;
- technological processes	past and present day ones; problems of the different technologies; reconstruction and modernisation; experiments and results; prime-cost of production;
- man power	changes in the number and composition (male and female); labour productivity; social improvements and qualification;
- finished production	changes in the variety, corresponding to the needs; cooperation and integration; marketing;
- ecological problems	past, present and future control of pollution; tendencies.

The above mentioned key problems serve as guidelines to the work groups of students in their process of exploration, during which they can choose wisely and act considerately. Economic, technological and planning processes are touched in connection with different jobs, which widens the active knowledge of the students about industry and professions of the people. Thus a sense of a personal vocation and fitness for a future career can be developed in the young generation.

Relation between teaching English language and industry. English language teaching as an optional subject at the English language schools in Bulgaria allows a wide range of cultural and scientific relation especially in the 10th and 11th forms. The optional curriculum in English language includes courses in

Functional English, Communivative English, English for Specific Purposes or Scientific English etc. The potential of the lessons in Scientific English can be wisely used by the teacher so that the students would be brought into a contact with different scientific fields and branches of science and production. So the teacher's duty again concerns a deep study of the local enterprises, scientific institutes, high institutes and universities, firms and organisations which are representatives of a variety of scientific spheres. The fact is that the bigger towns and industrial centres naturally supply the integrational process school-industry with far greater possibilities. Different enterprises with their type of production can correspond to different scientific fields such as chemistry (oil-refineries and petro-chemical works etc.), biological and biochemical (pharmaceutic, foodstuff industries etc.), mathematics, electronics, electrotechnics, (different types of engineering, high engineering schools, technological scientific institutes and many others). The first task of the teacher is to give the students the basic lexicology needed for each scientific field that is planned to be covered during the optional course. The students' opinion is also very important here if they wish any additional material and prefer it to the basic curriculum. Having acquired the lexicological and grammatical basis of the scientific style the students could be further organised into groups to work on any specific scientific field according to their wish and vocation. So the groups and subgroups and the variety of topics can satisfy a great deal of individual interests. Under the guidence of the teacher the students work by themselves on a specific vocabulary, they look for additional materials and visit works and enterprises, they meet qualified staff working in the translation offices and information centres there. Social links are established between school and production. The information given by the personnel brings the students closer to the specific job; the contacts allow a direct acquaintance with the very process of the industrial production and the corresponding scientific field. Under such conditions the students are able to understand, to imagine and be sure about what they are reading and translating. This is also the way to reach precision and adequacy of translating in both languages English and Bulgarian, because the lack of sufficient scientific information very often might be an obstacle to the exact manipulation of a given machine or to the application of certain technologies etc. The presentation of the prepared materials by the students and the discussions are the final stage of the integrational process school-industry. Then it becomes obvious that the students' knowledge of the technique of translating of the basic chemical, biological or other subject they have been working on has widened; their vocabulary has been increased and their Engish has improved; the interest they have shown in certain professions has become more vivid and motivated than initially.

Conclusions. It could be summed up that through stimulating an integration between school and industry the mode of teaching methods is altered, creative abilities of teachers and students are applied, an individual approach to the students is to a great deal achieved and from here their own perception of the vocation and interest in what might be their future occupation becomes more real and practical, thus the effect of education is better linked with life.

WORKSHOP L

Theme: **The ITATE papers: Modelling and applying techniques appropriate for effective adult teaching/learning.**

Section 2: Innovative practices

Tuesday March 14. 2.00 pm.

Adelaide Room 2

Griff Foley. *Participant Directed Learning at ITATE: Theory and Practice.*

Ruth Cohen. *Negotiating Programs.*

Elizabeth Leigh. *Using Games and Simulations to Structure Experiential Learning.*

Dorothy Brown. *Providing for Students from Non-English Backgrounds in Vocational Education.*

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SECTION 2 -INNOVATIVE PRACTICES

In this section the various papers examine implementation of major adult teaching and learning principles. The papers demonstrate the variety of learners with which these principles can operate e.g. industry trainers, vocational educational teachers and adult migrant language teachers. The papers also demonstrate the variety of techniques that can be used in vocational teacher education (and also in vocational education more generally).

In his paper Griff Foley, who has had considerable experience in adult education, describes the theoretical bases for participant-directed learning and discusses the problems associated with implementing self directed learning in a graduate program for community adult educators.

In Ruth Cohen's article Negotiating Programs she outlines some basic adult learning principles particularly the notion of experiential learning and some of the question these principles raise for curriculum design and teaching techniques in vocational teacher education. Cohen discusses a number of ways in which these principles have been incorporated with her teaching in the program for undergraduate vocational teacher trainees at ITATE.

Learning from experience is of course an important component of adult learning as various authors point out. In her paper Elizabeth Leigh describes how games and simulations can be used to structure experience therely making learning more effective. She outlines how to present games and simulations for these purposes and describes the different kinds of structured experiences which can be created by these teaching techniques.

Shirley Saunders in her paper Communicative Modules for Vocational Teachers describes a highly successful course unit on communication skills taken by graduate vocational teachers. Participants reflect analytically on their own teaching and experience to extend and consolidate their understanding of the communication process. The course unit employs a social cognition interaction model, with shared meaning between vocational teacher and student as a major focus.

Dorothy Brown's paper points to the necessity for all vocational teachers to be aware of the multicultural classroom and outlines some ways in which teachers of adults can help those students who have English as a second or other language.

PARTICIPANT DIRECTED LEARNING AT ITATE : THEORY & PRACTICE

GRIFF FOLEY

A version of participant-directed learning has now been practiced at ITATE for a decade. This section describes the theoretical basis of participant-directed learning at ITATE and then examines some aspects of its practice.

THEORY

This section is based on a statement (Foley & Evans, 1979) of the theoretical basis of adult educator training at ITATE which was written nine years ago.

> Teachers can work with people in either a technicist[1] or in a humanist way. If they work in a technicist way, ends take precedence over means and these ends are likely to be economic growth or technological development or operational efficiency or organizational expansion or the building of their own careers. In western industrial society, a technicist style of work is dominant. As the Czech social scientist Loebel (1972, p76) has pointed out :
>
> > Technocratic development means that applied science, technology and organization become the criteria of progress. The process itself is the dominating factor, and takes precedence over people. This . . . is closely related to the profit motive, since profitability is industrial field. The danger is that the creative people, since profitability has priority.
>
> The technicist approach has its roots in positivistic social science. Modern western social science grew out of a desire to control what was perceived as the inherently dynamic and unstable nature of industrial society. It was hoped that a positivistic social science, based on the methodology and epistemology of natural science, would provide an objective and neutral means of achieving this goal. (Fay, 1975, pp 18-21)
>
> The positivistic social scientist becomes a technician concerned with the development of effective means to ends that are decided by others. As the 'scientific attitude' spreads there is

less and less disagreement on ends : people come to confuse explanatory models of nature with the order of nature itself.

The style of teaching and learning that accompanies the positivistic view of the world is necessarily an authoritarian, telling one, in which the educator passes on the models as if they are the phenomena they represent. The educator sees him/herself as a knowledgeable person, whose function is to transmit 'knowledge' to the students who, if they know what is good for them, will absorb it, and reproduce it on demand.

A massive body of work has documented the outcomes of this style of teaching and learning. On the broad, social level the telling approach helps education systems to operate as selection mechanisms. If you are male and come from a middle class or ruling class family the chances are you will listen to what the teacher tells you, regurgitate it at the appropriate times and move successfully through the certification process to a well paid job. (Schools in Australia, 1973; Fitzgerald, 1975; Gilmour and Lansbury, 1979) But if you are working class, black, migrant or female you probably won't be spoken to as clearly, nor listen as effectively. The education system is more likely to reject you earlier and if you get a job at all, it will be a menial, poorly paid one. (Schools in Australia, 1973; Gilmour and Lansbury, 1978; Windshuttle, 1979; Australian Government Commission into Poverty, 1976).

The telling style also has important effects on the self and on relations between people. People get used to being told. They become passive. They expect to be controlled, and feel insecure and resentful if they are not. Bureaucracies have shown this.[2] The antithesis of the positivist way of making theory and the telling approach to practice is commitment to a democratic style of work which, in education, is characterized by an experiential and participatory method of teaching.

For the educator or other social scientist using the democratic approach the purpose of making theory is the development of liberating practice, practice which enables people to act on and change their lives. The theory and practice is created by the teacher/theorist working together with his/her students. The first step in the democratic method is for the teacher to study the reality of his students and to come to see the world through their eyes. For the next step, the teacher working in conjunction with the group identifies the felt needs and dissatisfactions of the members. The third step is for both teacher and students to understand the interrelationship between the conflicting wants and satisfactions which are the scaffolding of human existence. It is understood that both teacher and class members have wants and satisfactions to be explored within personal, social and cosmic frameworks. The next step is the setting out of options, exploring their advantages and disadvantages, and the final step is the development of strategies for taking up selected options.

The teacher does not, alone, identify the problems to be solved. Nor does the teacher 'make policy' : he/she does not tell students what actions they need to take to overcome their dissatisfactions. Throughout the education process the teacher is in dialogue with the students and constantly learns from them. He/she certainly educates the students. But the educative role is not one of transmitting a pre-determined expertise. The teacher works with students to understand reality. The reality that teacher and students encounter mediates their relationship. Each learns from the other. The teacher listens and comes to understand the students. With this understanding the teacher then helps students to codify and interpret their experience, to identify their needs and aspirations, and to devise strategies for satisfying those needs and aspirations. (Freire, 1972, 1972, 1978)

The educational practice generated by the democratic approach is one in which the educator works with the student to understand and transform their common reality. ....

PRACTICE

ITATE adult educator training programs are competency-based. From research and experience staff have identified competencies - sets of skills and knowledge - that they believe it is important for adult educators to have. Some of these competencies (for example, teaching skills, adult learning theory, program development techniques) are seen as basic and are compulsory components of ITATE programs. Others (such as research, counselling, administration) are treated as additional or optional. Students develop competence in these areas through a range of learning experiences : lectures, seminars, tutorials, workshops, field experience and learning contacts. The first three of these learning experiences tend to be organized along conventional lines and to be largely directed by staff. The other three sorts of learning experience involve a much greater measure of student control. To illustrate the realities of doing participant-directed learning at ITATE we will look at one of these forms of learning.

Contract learning is central to ITATE programs. All student work that is formally assessed is organized by means of learning contracts negotiated by students with their staff advisers. A learning contract sets out what the student will learn, how he/she will learn it, what the product of his/her learning will be, and how, and by whom, the work will be assessed.

In our experience, learning contracts are liberating for both students and staff. Students are able to focus on issues that are of immediate concern to them, and to link their formal learning to their jobs. By giving student opportunities to systematically analyse and act on issues and dilemmas learning contracts often lead to changes in work practices. For staff another benefit of contracts is that they put an end to the alienated learning and competitiveness that characterise so much of formal education.

But there are problems with contract learning, which we are still working with after nearly a decade. Contract learning is time consuming. It takes at least an hour for a student and adviser to negotiate a contract. As staff : student ratios in higher education worsen, which they have now been doing for more than a decade, staff have less time to really negotiate with students. The usual outcome is for the adviser to dictate the contract, simply to get it written. This, of course, is not negotiated learning at all. A related problem is students' lack of time to work on contracts. All our students are practising adult educators and have competing demands on their time. Family and work usually come first in students' lives, often leaving little time for their studies. The situation is exacerbated by mounting work pressures on students resulting from funding cuts and other outcomes of economic restructuring. These pressures sometimes lead to barely satisfactory learning contracts being submitted in ITATE programs.

Working with contracts is a learned skill, for both students and staff. Some people find the skill difficult to acquire. A recurring difficulty involves the establishment of clear and detailed criteria by which students' work will be assessed. A related difficulty is establishing parity of assessment across contracts and among staff advisers. This problem is exacerbated by the focus on individual contract learning that has become the norm at ITATE.

None of this should be taken as an attack on contract learning or on participant-directed learning generally. Even with the problems described here, contract learning is vastly superior to norm referenced assessment in both learning outcomes and participant satisfaction. Much of our current difficulties with contract learning arise from it taking place within an educational program which certificates people. There will always be tensions between participants' goals and the requirements of educational institutions. The challenge is to find productive ways of working with these tensions. We are currently working on three strategies :

(i) preparing students more thoroughly for participant-directed learning. This involves work on academic writing, contract learning and the theory of experiential and participatory learning.

(ii) stating assessment requirements more fully. This involves specifying what constitute "major" and "minor" learning contracts, and giving satisfactory and unsatisfactory examples of each.

(iii) achieving greater clarity and standardization in assessment through meetings in which advisers read and discuss the work of each others' students.

NOTES

1. For the concept of technicism see Manfred Stanley, 'Literacy " The Crisis of a Conventional Wisdom', School Review, Vol. 80, No. 3, May 1972, pp. 373-408, & Phillip JOnes, "Technicism & Control : Unesco, Literacy & The Dependency Process", (Department of Education, University of Sydney, mimeo, n.d.), p. 6

2. See, for example, the studies surveyed in J.A.C. Brown, The Social Psychology of Industry (Harmondsworth, Penguin, 1954). c.f. William Whyte's classic study, The Organization Man (New York, Simon & Schuster, 1956). For a brilliant evocation of both the tendency towards passivity and man's ability to resist even the most subtle and pervasive oppression, see David Ireland, The Unkown Industrial Prisoner, (Sydney, Angus & Robertson, 1969).

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NEGOTIATING PROGRAMS

RUTH COHEN

The principles of adult learning and the importance of reflection in learning have underpinned a new approach in the Teacher Education program for a group of TAFE teachers at ITATE during 1988. This group has negotiated the content of its own program for the first semester of a two year course.

The mode of operation for this program is experientially based and accords with the three elements of experiential learning identified by Bawden (1985). These are :

"Firstly the notion that learning is an active and continuous process by which we attempt to make sense of our ever changing experiences. Secondly, the process demands abilities that are opposites in their nature - active participation and passive reflection, concrete awareness and abstract thinking. Thirdly, learning is a tensely active process precisely because each of us attempts to resolve the conflicts caused by selecting between these opposing abilities. It is this dialetic that drives us to learn."

The Kolb model and its derivatives about adults' learning cycles and the ways by which one's preferred learning modes may be modified once they are acknowledged, emphasise both the individuality of learning and the power of the individual in directing his or her own learning. The continuous input of the learner in the decision making processes has been a lecture of the program.

The group of teachers involved all started their teacher education course in July 1988. Four groups of teachers began at this time and all have implemented some aspects of the new program. One group, however, operates collaboratively with the lecturer in applying all these innovative approaches. It is this group to which this case study refers. It is a case study of adult learning and reflection in action.

The following principles provide the philosophical base for this program.

Principles of Learning

1. Adults are responsible for their own learning and therefore have a vested interest in the planning of the program.
2. Learning is a complex holistic process in which the sum of the parts do not equal the whole.

3. Adults have different needs - as intellectual, physical, social and psychological which need to be acknowledged as part of the effective learning process.
4. Adults are likely to be anxious about approaches to learning which appear similar to earlier less successful school experiences.
5. Learning is a continuous process resulting from experience.
6. Adult learners are highly motivated and achievement-orientated with specific goals.
7. Adult learners expect to be part of the decision-making process determining the reasons for, methods used and anticipated outcomes of any learning experiences.
8. Adult learners expect learning to be immediately relevant to their expressed needs.
9. Learning is an active, creative and changing process over time.
10. The lecturer, teaching about learning needs to be replaced by facilitator of learning - only the learner can learn.
11. Facilitators and participants have a vested interest in the outcomes of the learning process - their own and each other personal learning as this has implications for the next stage of the process.
12. Critical reflection involving both cognitive and affectivdimensions requires time so that experiences can be effectively reviewed and learnings extracted. This time element needs to structured into the course so that both individual and group reflection can take place.

Questions this process raises :

Who is doing the teaching and the learning?

Will the program the teachers negotiate be an adequate preparation for their role?

What is the effect of the reflective activities on their development as teachers?

Is this method of course design valid for education of TAFE teachers?

Which of these processes might they use in their own classes?

How can assessment and evaluation be applied?

Implementation

There are a number of ways these principles are incorporated in the course design and implementation.

Negotiated learning : The group (teachers and lecturer) has from the beginning determined its own program. This was done independently and without knowledge of the available set course. The teachers decided the topics they wished to learn and the order for those topics . The program is planned for a term, and this is reviewed and renegotiated half way through the term to take account of any suggested needs or changes that may emerge.

Critical Reflection : All teachers are engaged in writing a protfolio each week in which they describe and assess their experiences and learning related to their development as a TAFE teacher. This reflective activity also requires them to critically evaluate their performance as a teacher and to develop action plans to improve their performance.

Variety : Learning activities offered have taken account of the different learning styles within the group, and created opportunities for teachers to work individually, in small and large groups.

Learner Support : Unconditional positive regard and valuing of the learner and his or her experience have created a positive climate for development. The opportunity for individual consultations about specific issues are features of this learning process.

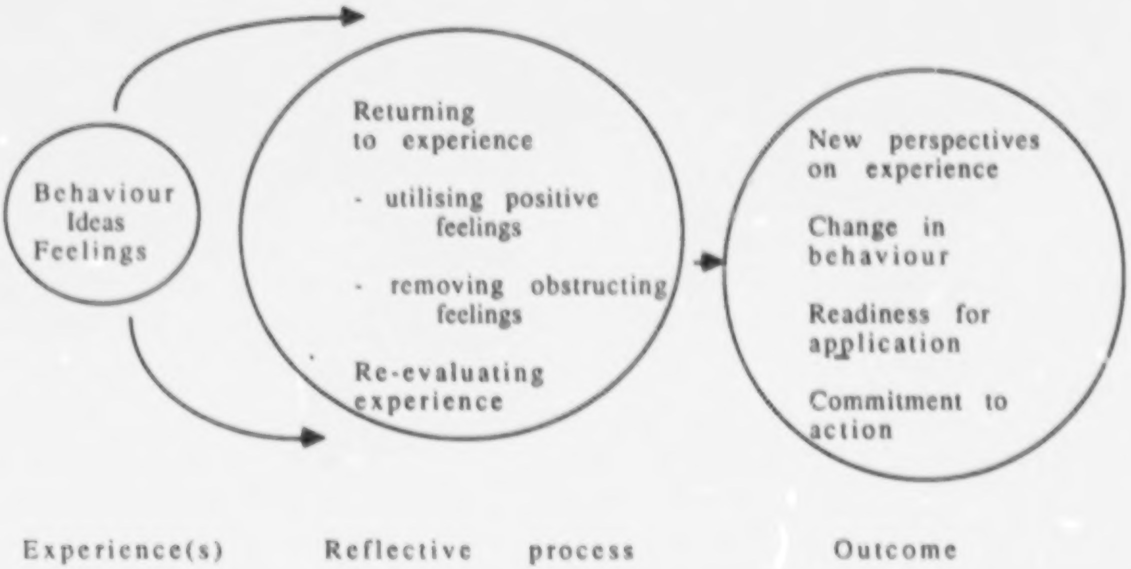
Experiential Learning : For TAFE teachers, the learning process in ITATE is also a modelling process of approaches to teaching and learning. Learning strategies used experientially are more likely to be implemented in their own classrooms.

Immediate relevance of learning : The learners decide the order of the learning program, and by negotiation with the group may change earlier decisions if appropriate. Times to assess progress and continuing relevance of the program is built into the case.

Individualised learning by contract : As well as the negotiated group program, teachers are required to establish specific individual learning goals which they want to achieve, develop an individual learning contract which specifies their objectives, the methods by which these will be achieved, the criteria to assess whether the learning has taken place and a self-evaluation of their achievement. In addition to written reports, teachers share their experiences orally with the group.

Reflections on individual and group process and progress takes place regularly. The Boud model (1985) forms the basis for this process. These informal but structured self-assessment of personal goals is encouraged by this process.

The process of reflection Boud et al
1985 p36


Behaviour
Ideas
Feelings
Returning to experience
- utilising positive feelings
- removing obstructing feelings
Re-evaluating experience
New perspectives on experience
Change in behaviour
Readiness for application
Commitment to action
Experience(s)
Reflective process
Outcome

Micro-teaching : Specific styles of the teaching/learning process are practised in small groups. Feedback from the group is an important part of this learning process.

Qualitative and quantitative feedback suggests that the teachers involved have found these methods of learning most exciting and worthwhile. Further work needs to be done to enable these methods to be evaluated over a longer period, using larger numbers of staff and students.

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USING GAMES & SIMULATIONS TO STRUCTURE EXPERENTIAL LEARNING

ELIZABETH LEIGH

> "Experiential learning occurs when a person engages in some activity, looks back at the activity critically, abstracts some useful insights from the analysis, and puts the result to work".
>
> Ref Guide to Handbook & Annuals p. 3
> J W Pfeiffer & J E Jones San Diego Ch 1981

While this process occurs frequently throughout our daily activities, it is possible for adult educators to use a range of structured activities and condense and focus the learning dramatically in more formal settings.

The activities which provide this structured focus are known variously as "Structured Experiences" or Simulations or Games. This paper is intended as a guided introduction to the key components of the activities, and some of their uses in adult learning situations.

Several classification schemes have been proposed in an effort to help users make informed decisions about their use of particular activities. Diagram one presents a method for classifying activities based on their closeness to factual data. This "spectrum" approach helps also to identify how much interaction there will be during the period of action. Those activities closer to "real life" provide less scope for players to "act out" the events represented in the material.

Diagram two presents a radically different concept of classification and is based on the interplay of key characteristics across a range of activities. Structured Experiences - using this schema - represent an overall categorization within which increasing refinements shape specific elements. (e.g. games must have rules and competition; simulations must represent reality and be on-going; case studies involve in-depth examination of pre-determined materials and require decisions based on the data as given.

The activities used in ITATE Associate Diploma courses cover the full range of the materials listed. They are selected on the basis of their relevance to the program format and content and are expected to lead participants into in-depth discussion and exploration of their own experience and learning.

Regardless of their classification, all of the activities share some common elements. These are the factors which distinguish the materials from other processes of learning. They can be divided into two groups of elements as follows : the action elements which describe the "state of play" at any point during the experience, and the drama elements, which identify the factors at work during the action.

The 'action' elements have a sequence of three steps. They cannot be done out of sequence, but can be repeated on a smaller scale within the process of the action. The first step is to brief the participants. Acting as "Games Director" the Facilitator must ensure that all participants are aware of the general purpose of the activity, of any limitations on their behaviour during the action and of the place of this activity within the overall learning program.

Once briefed participants play out the second stage. The directors role is strictly neutral observation, with residual power to halt proceedings but not alter them in any way.

As the action comes to an end the participants realize that they have created a rich learning experience which will require extensive analysis before the learning can be applied. This debriefing stage sees the Facilitator again organizing the group and leading the discussion, with the intention of guiding the analysis and assisting participants with the recall of their experiences and associated learning.

The "drama" elements are four in number and are introduced during the briefing. Firstly the participants will assume roles, either as themselves in an unusual context or an assiged 'persona' described via a role card. They will then be given the scenario within which the action will take place. Then they are given the structural rules which create the fabric of the action. They may - or may not - discover the two levels of rules which will operate. These are the game/controlling rules which create the play and their internal beliefs and values which rule their own behaviour and will be highlighted during the action. The final element is the recording process which refers to the various products of the action. This may range from recollection of behaviour, to elaborate colleges, bridges built of pins and straws or abstract "road maps". The interplay of these elements is the source of the action and the basis for learning.

When involved in a "structured experience" adults reveal depths of creativity and involvement, which are not usually touched by more formal teaching methods.

The immediacy of the experience, coupled with time constraints, an urge to succeed and the sheer pleasure of action, combine to create a learning environment and learning outcomes which are applied - and recalled - with pleasure long after the immediate action has faded from view.

DIAGRAM TWO

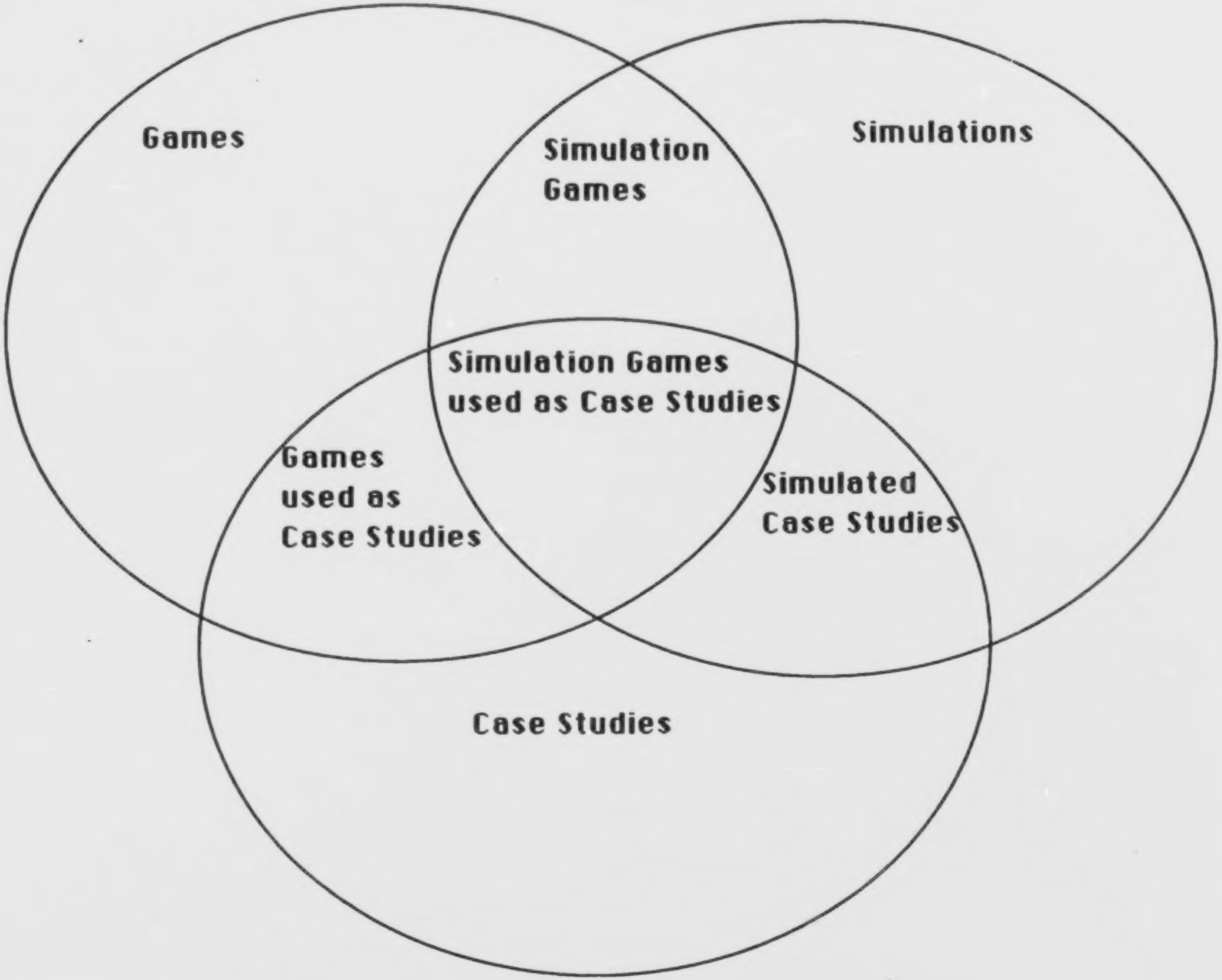
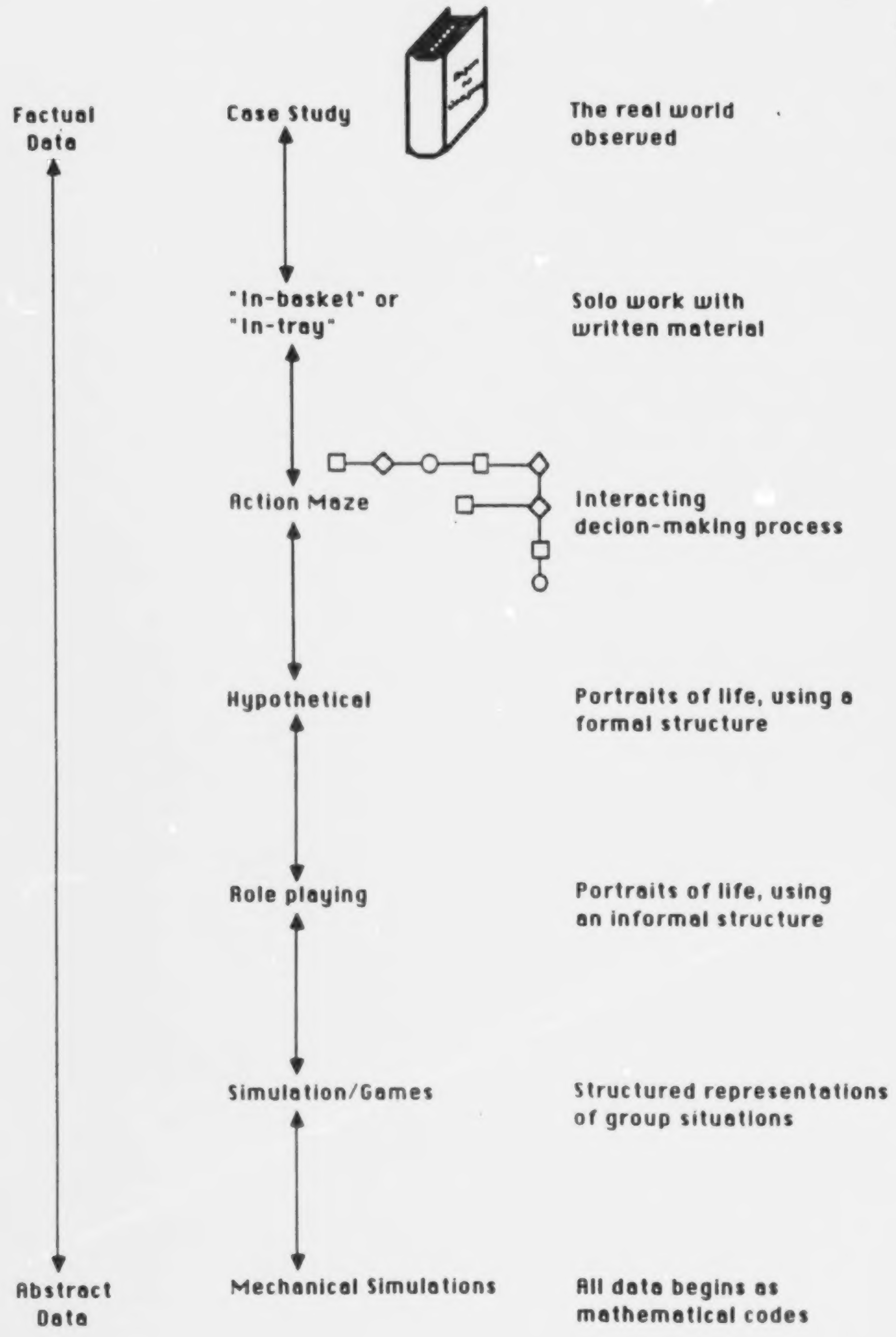

Games
Simulation Games
Simulations
Simulation Games used as Case Studies
Games used as Case Studies
Simulated Case Studies
Case Studies

DIAGRAM ONE


Factual Data
Case Study
The real world observed
"In-basket" or "In-tray"
Solo work with written material
Action Maze
Interacting decion-making process
Hypothetical
Portraits of life, using a formal structure
Role playing
Portraits of life, using an informal structure
Simulation/Games
Structured representations of group situations
Abstract Data
Mechanical Simulations
All data begins as mathematical codes

COMMUNICATION MODULES FOR VOCATIONAL TEACHERS: ENCOURAGING REFLECTION ON COMMUNICATION PRACTICE

SHIRLEY SAUNDERS

ABSTRACT

At the Institute of Technical and Adult Teacher Education we have designed a set of fifteen modules on communication skills for beginning graduate vocational teachers. These modules are the substance of the course unit "Communication Skills". The modules were developed to assist vocational teachers to identify their current approaches to interpersonal communication, establish a personal rationale for these approaches, develop alternative strategies, implement these and evaluate outcomes. This process of reflection on practice is a key feature of the design of the modules in relation to both the weekly group sessions and to course unit assessment. Essentially we are implementing an adult-based framework of reflection on experience and teaching practice.

Specifically, the four stated objectives of the course unit in Communication Skills encourage vocational teachers to arrive at their own understandings of :

1. the nature of the human communication process as it relates to vocational and adult education;
2. relevant interpersonal skills for teaching in TAFE;
3. intercultural and gender-based variables in the communication process;
4. future directions for continued self-directed learning and development

During the course unit we discuss the personal relativity of these understandings. We focus on the communication process as a social cognition interaction where meanings are constructed depending on various psychological and cultural assumptions of the participants. As important aim of communication in vocational education is to share meaning between teacher and student. All the communication modules emphasize this theme and offer guidelines, where appropriate, for teachers to develop their students' skills as well as their own.

The following overview of the fifteen modules indicates the interpersonal skills identified for discussion, practice and reflection : process consultation skills, listening and counselling skills, assertiveness, language skills, awareness of nonverbal communication, interviewing skills, conflict resolution and negotiation skills, group skills, change agent skills with special reference to promoting effective writing skills, cross-cultural communication skills, persuasive skills and the skills involved in establishing and maintaining credibility in order to effect attitude change.

Workshop activities which are presented in the modules are experiential in nature. For example, in the module which deals with process consultation skills participants complete a self-diagnostic scale of present and target communication and teaching competencies and then form into small groups. Each group member acts as a process consultant to encourage other group members to develop strategies to reduce the perceived gap between present and target competencies. This consultation experience is then processed according to an Observer's report on specific listening and responding skills demonstrated by the process consultant. Feedback is also given by the "client". The outcomes of this experiential learning then become the subjects of on-going reflection as the beginning teacher progresses through the course and gains more experience in the classroom.

Other experiential activities are concerned with role plays. For example, participants adopt various cultural roles in order to explore issues of cross-cultural communication particularly in group problem-solving. Debriefing of this experiential exercise highlights the assumptions commonly made by educators about the behaviour of students from non-English speaking backgrounds. The group then works together to develop strategies to facilitate the learning of non-English speaking background students.

Collaborative problem-solving as a conflict resolution technique is practised experientially as participants negotiate for their own best possible outcome in a simulated Staff Meeting. The task and maintenance functions of group roles are considered by participants in two structured experiences which involve sharing clues in order to solve a problem and attempting to reach consensus about effective leadership. In each of these activities group members act as Observers and debriefing occurs at both content and process levels.

Video-recording facilities are used for feedback on listening and assertiveness skills. Participants also conduct counselling interviews which they design themselves, video the interview and play back for analysis of communication skills. Other modules, for example on communication and perception, contain case studies for analysis during the workshop and self-directed activities which extend workshop discussion. These self-directed activities may be completed in the participants' own time and form the basis of further reflection on practice.

A number of intrapersonal skills have been included in the course which relate specifically to the vocational educator as a reflective practitioner. These intrapersonal skills include : self-awareness of our own personal constructs of the world, awareness of the facilitating and restraining forces on our lives, values clarification, self-diagnosis of communication competence and ability to identify directions for self-directed learnikng and development. Awareness of these areas should help adult learners to reflect on past and present communication habits and the relationship of these behaviours to vocational teaching.

The design of the course and the experiential nature of the modules were based on a number of assumptions about the participants and adult learning. We believe that effective adult learning involves serious consideration of the wealth of expertise and experience brought to the course unit by the participants. We assume that for much of the course participants will prefer to share and contribute rather than be instructed. Effective adult learning should result from addressing real personal and professional concerns and from group problem-solving.

Essentially we developed these modules for mature adults who can reflect analytically on their own teaching and who accept some responsibility for the success or failure of their own learning. The expertise and experience of the participants represents a valuable resource and group members can, and do, make powerful contributions to the course. Effective adult learning presupposes that self-directedness is a logical outcome of successful formal educational experiences. These communication modules were designed to enable vocational educators to become aware of what people need to do in order to develop competence as communicators. They provide a framework for vocational teachers to arrive at their own meaningful insights and to stimulate further inquiry.

PROVIDING FOR STUDENTS FROM NON-ENGLISH SPEAKING BACKGROUNDS IN VOCATIONAL EDUCATION

DOROTHY BROWN

Australia has one of the most ethnically diverse population in the world. What are the implications for vocational teacher training when a large proportion of students in vocational classes have a first language other than English? The classroom teachers need to be aware of how languages are learnt and how they can assist those who are learning English through content areas. The first language is successfully learnt in an environment where the language learnt is about the here and now, where there is plenty of repetition. The child is also surrounded by people who confidently expect it to succeed and who accept approximations as the learning takes place at the learner's rate. The vocational teacher needs to be able to take these basic principles and work through what they mean for the bilingual students in their class. Whatever the specialised area we work with, language and learning to think well depends on learning to use language in a given subject area. An essential part of a subject is the manner in which its 'content' is given in linguistic expression.

As Australia is one of the most ethnically diverse populations in the world, there is a need for vocational teacher training to adapt to this situation. In many classess a large proportion of the students have a first language other than English, and these students may be fluent or may be improving their English through relevant areas. It is not sensible to think of NESB students as a homogeneous group.

ITATE is aware that there is a need for specialist highly trained ESOL teachers but also that every teacher needs more and even just positive attitudes towards second language learners. They also need some knowledge about how the English Language works, the role of language in their subject area and some techniques to help all students learn through English. The situation of students of other languages in an English speaking class does not differ in kind, but only in degree from that of students where first language is English. So that what is learnt when considering several language learners will help all students. All classes in the Dip Ed & Dip Tch have a small compulsory component in helping the NESB student and there is also an elective available for both programs. The elective in the Dip Ed would seem to me to be a minimum for all teachers. There are two key questions :

> How are languages learned? and
> Is learning the second language like learning the first?

The first language is successfully learnt in an environment where the language learnt is about the "here and now", where there is plenty of repetition, where the caretakers speak slowly and clearly, use simple sentences and finish them. The vocational teacher in the elective is helped to reflect on their basic principles and to work through what they mean for teaching bilingual students in their own class.

The content teacher should wherever possible to able to offer help to students in their class for at least two reasons. And the students will learn English through content areas just as they learnt their mother language from the "here and now." These students have chosen to be in this class. English classes for speakers of other languages are not vocational, they are pre-vocational and there comes a time when the students want to and need to join the mainstream although their English may not be perfect.

The elective, without taking on the whole of the theory and practice of ESOL, looks first at simple tips for improving pronunciation, and some of the theory & practice of listening. Reading in content areas is stressed because whatever the specialised content, it uses language and learning. To think well depends on learning the use of language in that subject area. Teachers need to be helped to become aware of this by introspection and reflection before making programs and revising materials. In most subject areas new vocabulary and new meanings for old vocabulary are a learning burden for all students. Techniques are suggested to help with this problem. The teacher in the elective learns to use such helpful techniques as structured overviews, graphic outlines, semantic maps, diagraming procedures and reproduction exercises. They learn to encourage students to read at the literal, the interpretive and the applied level. The help given with reading and vocabulary leads to better essay writing and record keeping. In all areas, attitude to errors is important, how, when, where and why to correct are discussed.

All this adds up to very good teaching for all students, but the insights have come from the field of applied linguistics especially English Language teaching for speakers of languages other than English.

If the subject teachers are expected to do all this, what then is the role of the specialist ESOL teacher? There is a post graduate diploma in TESOL at ITATE and the graduates are needed in vocational education in five ways :P

1. Teaching beginners with little or no English.

2. Helping students with some English as quickly as possible to have enough English and enough confidence in their ability to use it to join mainstream classes. Often students know more than they use and the teacher has to "unlock" their language. Sometimes courses are general but they are increasingly focussed to a group of students with special linguistic needs or coming for special courses.

3. Teaching alongside subject eachers in a team-teacher or co-operating teacher situation. This model is used for bridging courses and in mainstream courses. The ESOL teacher is trained to analyse how the language is being used by the tutor and the class members, whether the students can understand the teacher and each other, and how that interaction can be improved. They also decide whether the students can follow the texts and the notes and offer help with the production of materials, tutorials for students who need extra help, and suggestions on presentation, sequencing, attitudes to error, evaluation and how students can learn to become independent learners.

4. Working in independent learning centres where students have individualized programmes out of class time.

5. Some teachers are now specialised in their own field in TESOL.

Most of those who have graduated from the ITATE Dip TESOL have come from English and language departments. However, an increasing number of subject teachers who feel the need to know more about language learning and the language of their subject are coming forward to do the diploma. So far we have had students from science, law, horticulture, business studies, office practice, travel and child care. These people return to their own classes needing no team teacher with them to assist speakers of languages other than English.

WORKSHOP M

Theme: Economic Changes and the Technician Workforce.

Tuesday March 14. 3.30 pm.

Adelaide Room 3

Mr. Bryan Whisker. Chief Advisory Officer (Training Development) Vocational Training Council - New Zealand. *The Technician Workforce - Sector changes as an economy restructures - implications for training.*

THE TECHNICIAN WORKFORCE - SECTOR CHANGES AS AN ECONOMY RESTRUCTURES- IMPLICATIONS FOR TRAINING

A paper prepared for a workshop at the TAFE International Conference on
Recent Research and Development in Vocational Education.
March 1989

Bryan D Whisker, Chief Advisory Officer (Training Development),
New Zealand Vocational Training Council

INTRODUCTION

In 1985 the Vocational Training Council was the New Zealand respondent to a nine nation O.E C.D inter-country study on how education and training underpinned the economy and contributed to its effectiveness. One of the results of that study was to identify the concerns in New Zealand relating to **technician training** and the need to improve the skill base in that part of the workforce. The paper **"Technician Training - a New Zealand Perspective"** presented at this conference by the Director of the Vocational Training Council, Derek Wood is based on a follow-up industry based research project carried out in 1987/88. This workshop examines the issues revealed in the study and the implications for training that arise.

DEFINITION

The segment of the workforce that the term technician covers is a rapidly changing one and it now includes a wide variety of occupations. **In general terms it encompasses people who would usually have qualifications below a "professional" (or university) level but above the trade (or equivalent) level. In terms of their activities they have been described by UNESCO, the British Technician Education Council (1980), and other authorities as "a broad band of personnel who have certain features in common: they have to exercise technical judgement, understand the principles underlying their work and the purpose of what they are doing and often supervise other staff".** For the sake of brevity I will use "technician" as an all inclusive term throughout this workshop to cover this middle group of occupations.

BACKGROUND

NZ has a low technician base when compared with other (particulary European) OECD countries. The 1986 census indicates 7% of the work force fits this category. Shortages began to show up in 1985/86 with economic sector groups expressing concern. Since that time concerns have become muted but this has paralleled closures and redundancy particularly in the manufacturing sector. As the economy restructures and moves further from that of an unprocessed agricultural base, and more into high technology and service areas international evidence indicates that the demand for technicians is likely to increase.

Problems however, arise with definitions of "technician" and in interpretation of the boundary with "professional" when making international comparisons. The economy mix can vary as well. However, the trend for the future is likely to be such that the demand for employees in these categories of skill will rise.

THE PROJECT

An examination was carried out of 372 companies or organisations employing 89,017 people of whom 6802 were technicians in terms of the definition of who could be classified as a technician. The study had several objectives:-

The first to determine the present **distribution** of technicians according to sector of industry, geographical region and size of establishment to provide a baseline against which to compare future changes. The second to obtain information about the **range of activities** carried out by technicians in their jobs and the **skills and knowledge required**. A third was the to chart the **mobility** of technicians and to seek information about **career paths** as both of these factors have implications for training and retraining. Finally, it was necessary to establish the **pre-entry education and training** background of technicians and to identify **changing trends** which could affect recruitment and training in the future.

The workshop examines some of the 18 sectors of the workforce studied and identifies the issues arising within New Zealand industry and the implications for training in the 1990's. Sectors examined in the project were:-

Science
Building
Draughting
Health
Horticulture
Tourism
Managing
Accounting
Transport/Distribution
Engineering other than Electronic
Electrical and Electronic
Metallurgy
Agriculture
Forestry
Statistics/Mathematics
Printing/Publishing
Manufacturing/Production
Data Processing/Business Computing

An initial postal survey for the first quarter of 1988 of the companies involved was followed up through the year by personal interviews examining the issues revealed. This was an industry based project and the views expressed are from an employer perspective facing the harsh realities of competing in an unprotected environment brought about by Government policy.

FINDINGS

These were analysed from two perspectives as a consolidated slice of the workforce and as individual sector groups. Variations on the sector groups were contrasted with that of the consolidated response of all the sectors. Shifts in priorities for training and retraining were then analysed and the reasons for these examined.

Details will be available at the workshop.

THE ISSUES

These relate to:-

- the question of supply and demand for technicians
- the variations in economic sector growth
- the most appropriate delivery systems for training and retraining, both on and off the job
- the changes in skill required of the workforce at this level.

The workshop will examine these issues through a series of questions selected by those participating. In the time available it will not be possible to cover them all and those attending should in advance identify from the following list those of particular interest to them.

QUESTIONS

Supply/Demand

1) How can future demand shortages be more effectively identified in advance, to give sufficient lead time for training?

2) Does Project Scope (Australia) and Project Fast (New Zealand) provide sufficient data bases on required subject choices in the upper secondary school to avoid deficiencies in the educational base of future technicians occuring? If not, what modifications are required?

3) With decreasing demographic cohorts of workers entering the workforce in both countries should the emphasis move from initial training to that of retraining?

4) What more effective methods are there in marketing technician occupations as skills shortages develop?

The Variations in Sector Growth

5) Can sunrise industries be identified effectively?

6) How is it possible to establish a links between emerging sectors in the economy and changed skill bases for technician?

7) Can the assumption be made that sunrise industries will mainly be in the information, service and high technology areas? If so can education and training systems be structured on this basis?

8) Is there a need for centralised planning for technician training or can it operate soley in a free market decentralised system responding to market forces?

The Most Appropriate Delivery Systems for Training and Retraining both on and off the job

9) How can the retraining requirements for adults in the workforce be met to increase the supply of technicians?

10) How would an open learning system enhance the opportunities of disadvantaged employment groups in reaching the skill level required in minimum time and cost?

11) What role does industry have in the giving of time release and support to employees for on and off-job training?

The Changes in Skill Required of the Workforce at this Level and the Implications for Pre-entry training

13) Supervision and management skills were strongly identified in this study as necessary skills for technicians.

What implications does this have for technician training?

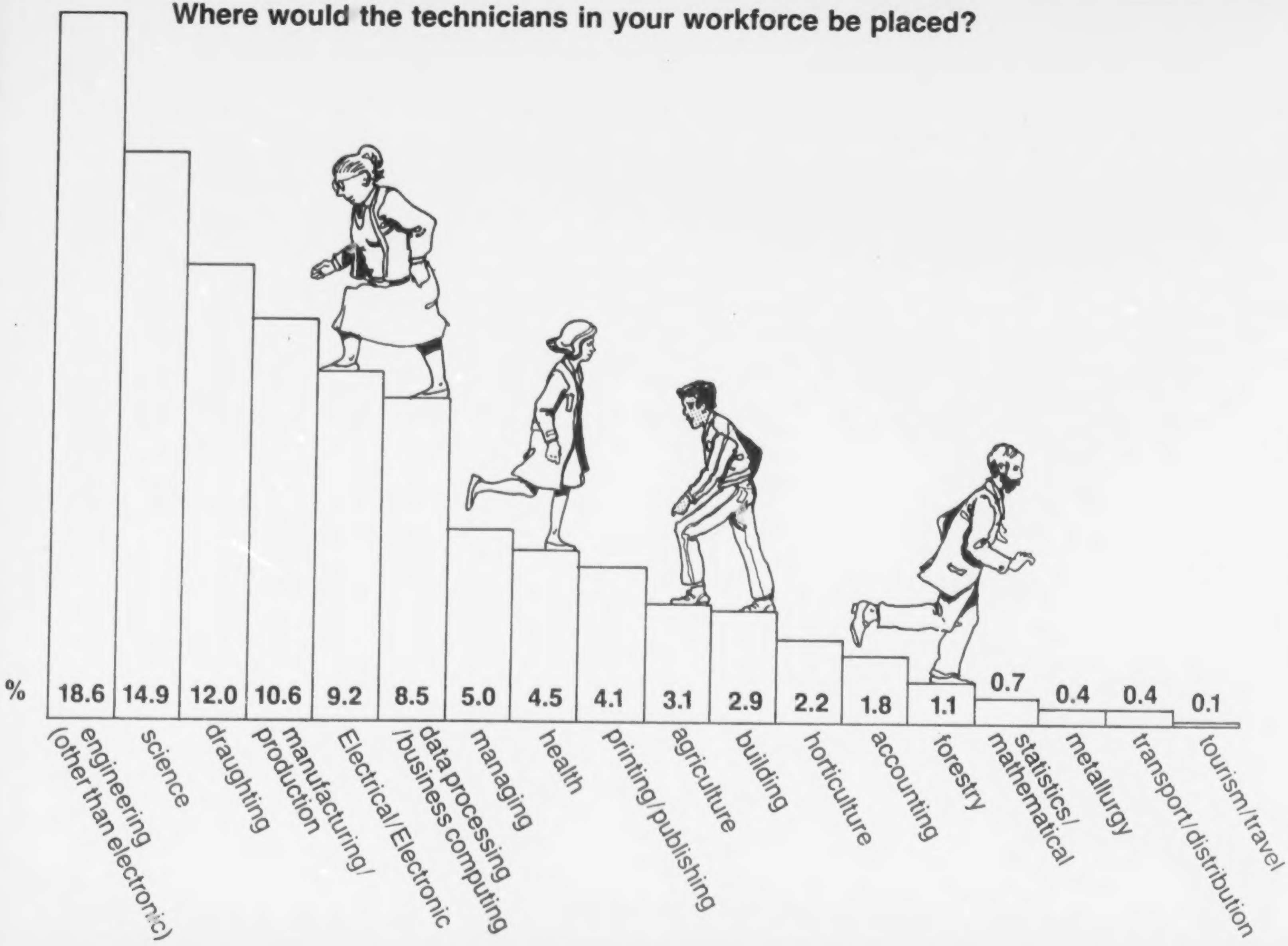
14) Interpersonal and communication skills were similarly identified as essential attributes of a modern technician.

How should training adapt to this changed focus?

15) What are the implications for the fall-off in requirements for diagnostic skills?

16) In the development of a technician what is the desirable relationship between interpersonal and technical skills and where should each be carried out?

Where would the technicians in your workforce be placed?



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WORKSHOP N

Theme: The ITATE papers: Modelling and applying techniques appropriate for effective adult teaching/learning.

Section 3: Evaluation and research into innovations.

Thursday March 16. 11.00 am.

Adelaide Room 2

Andrew Gonczi. *Using a Journal in Developing Teaching Skills: An evaluation.*

Mr. A.J. Watson. Principal Lecturer. *Block Training for New South Wales TAFE Teachers. An evaluation over three years.*

G. Bennett and L. Field. *The Learning Contract Method as a Means of Developing Self-directed Learners: Evaluation, study and implications for the development of adult educators.*

SECTION 3 - EVALUATION AND RESEARCH INTO INNOVATIONS

There is an obvious need to undertake various kinds of evaluation of how successfully the innovations outlined earlier operate. This section examines various kinds of evaluations varying from anecdotal to full scale evaluations of entire programs.

In the paper Using a journal in Developing Teaching Skills - An Evaluation, Andrew Gonzi describes a small qualitative study which looks at the benefits and difficulties associated with using a journal to promote reflection in trainee teachers with the object of improving teaching skills. While there have been considerable difficulties with implimenting the innovation he concludes it has considerable potential so long as the journal is supported by other elements in the teacher education program. The potential for using a journal in any vocational course which has a mixture of theoretical and practical experiences is also considered.

Tony Watson's larger scale summative evaluation looks at the benefits of a block release pattern for trainee teachers. He concludes that the block release has been of considerable benefit for TAFE teachers in NSW.

The paper The Learning Contract as a Measure of Developing Self-Directed Learners by Gary Bennett and Laurie Field outlines in a highly practical way how self-directed learning can operate with a group of industrial trainers. The use of learning contracts and some difficulties associated with them is highlighted. Bennett also examines some recent research which contrasts self-directed methods with some traditional techniques and the different effect of using these techniques on desire for further learning.

USING A JOURNAL IN DEVELOPING TEACHING SKILLS : AN EVALUATION

ANDREW GONCZI

INTRODUCTION

One of the most challenging questions in the professional preparation of teachers in vocational education is how to get people to think critically and continuously about the practice of teaching.

While there have been many advances in the theory of education and teaching over the past few decades, there has been little attention paid to the practice of teaching.

What good teaching is, is as unclear as it ever has been. What ways do we have of deciding what is good teaching? Is good teaching in some circumstances less so in others? To what extent does the nature of the subject determine what good teaching is? Is it possible that one day we might leave a body of knowledge about the practice of teaching akin to our knowledge of the practice of engineering or even of management. This paper explores one attempt to start to come to grips with some of the questions.

In 1987 all trainee teaches in the Graduate Diploma in Education (Technical) at ITATE were asked to keep a journal which recorded both their thoughts and feelings relating to their teaching and learning during the year. The general theoretical framework which underpins the journal has been outlined in the earlier papers by Scott and Knights. It is sufficient to say here that it was felt that the keeping of a journal would encourage trainee teachers to reflect on their experiences (and particularly their weekly teachings with a view to clarifying what it was that made their own and their colleagues' teaching successful and/or unsuccessful.

Each trainee teacher was asked to do a number of things in their journal.

1. Write a weekly critique of their own lessons noting things which went well and things to improve.

2. Reflect on how they felt during and after the learning and how it affected their lessons.

3. Think about how lectures/seminars/discussions at ITATE helped (or hindered) their classroom teaching.

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4. Explore, (over a few months) the atmosphere/culture of their College and section and evaluate the effect of this on their teaching.

5. View some of their teaching colleagues and summarize why they felt certain lessons were successful or bad.

In addition to completing there tasks, which were outlined for all trainee teachers in written form, all teachers met once or twice a month in small group with their ITATE lecturer to discuss their journal entries. The journal itself was completely confidential but each teacher was expected to contribute to these small groups discussions.

EVALUATION OF THE EFFECTIVENESS OF THE JOURNAL : METHODOLOGY

In order to investigate how effective the journal was in helping teachers to improve their practice a group of 14 teachers (out of 120) was chosen to take part in a small study.

Each student was interviewed for one hour. There interviews were based on a loosely uniform set of questions designed by the researchers(I). However the interviewers had agreed to encourage the teachers to say what they liked irrespective of the interview schedule.

An attempt was made in the interviews to explore interalia teachers learning styles, past educational experiences, prior knowledge of ITATE as well as their general openness or closedness to new ideas. It was felt that these things would affect their attitude to the journal. All interviews were tape-recorded and transcribed after the interview.

In addition to the interview the ITATE lecturer in charge(2) of the 14 traineee teachers was asked to rate each teacher with regard to their general openness or closedness to new ideas without any knowledge of the rating of the interviewers on this question.

(I) Interviews were conducted by Zita McClure, Lecturer ITATE and Kate French, Research Assistant ITATE.

(2) Known as group advisor.

MAJOR RESULTS

(i) There was considerable support for the key concept which underpinned the journal viz the usefulness of structured reflection on experience as a means of improving professional practice. Twelve of the fourteen teachers in training felt that the journal has been useful in this process.

(ii) Four of the fourteen trainee teachers felt that the journal has been very useful. They all said that the act of regular writing helped crystalise previously vague ideas and made clearer the link between the discussion of practical and theoretical issues in their teacher training course and their own teaching. These four teachers were rated as being open to new ideas by their ITATE group advisor.

(iii) Two of the fourteen felt that though reflection on their practice was important, there was no need to spend the time writing in a journal to accomplish this and that thus the journal was an intrusive waste of time. These two were rated as closed to new ideas by their group advisor.

(iv) The remaining eight teachers found some aspects of their journal work useful. They had, however, a number of reservations and criticisms.

  (a) They felt unclear about what was expected of them - what they should write in the journal, at what length.

  (b) Lack of time to fill in their journal regularly was perceived to be a problem particularly given the high assignment load.

  (c) A number asked whether there was a need to write their reflections down in a formal way.

INTERPRETING THE RESULTS

(a) The journal was clearly of great benefit to the four teachers mentioned under (ii) above. Why this was so became quite clear on a close analysis of the interviews. All had had some experience with subjective writing before coming to the program--- either through the use of personal diaries, case notes and reports or work diaries of some sort. Even though the journal tasks required most of them to write in a more personal subjective way, they already had a framework which made the transition quite easy for them.

(b) The two teachers who found the journal to be of no value had no experience with the sort of writing the journal called for. Both had come from educational areas where the teaching was traditional relying largely on lectures and testing knowledge through examinations. These two were rated by their group advisor to be closed to new ideas.
Whether it was their empirical technical traditional educational backgrounds or their general lack of openness which caused these two to reject the use of a journal is impossible to ascertain from the data. It is reasonable to suggest however that where this combination exists it would be very difficult to develop a commitment to using a journal to promote reflection.

(c) The results of this research have many implications for the major groups there who found difficulties with their journal work but also acknowledged its possibilities. Given that most of them came from traditional academic backgrounds it is not surprising that they were wary of being asked to reflect on their feelings and their practice in written form in an "academic" course.

It is clear in retrospect that much more preparatory work needs to be done before introducing the journal so that this group could start experimenting with it from the very beginning. Obviously the clearer the written instruction the better. It is unlikely, however, that this was the key to effective use of the journal.

A series of graduated writing exercise undertaken and discussed in class would be helpful in reducing the threat of failure and clarifying the sort of things that might be included (e.g. writing letter to other class members or to ones spouse about the day's activities).

Much more important, however, are the commitment of the lecturing staff to the concept, and the degree to which the overall structure of the program and its individual subjects support the journals' underlying rationale. On reflection, it is clear that the lecturing staff themselves needed an extended introduction to using a journal. Uncertainty or cynicism by staff about using a journal will be picked up very quickly by those students who are uncertain of its nature.

On reflection it is also clear that teaching technique used in the program and the overall structure of the program not only failed to assist trainee teachers in using the journal but even undermined it. In this particular case, courses on the use of media, the environment of TAFE and communications used traditional teaching and assessment techniques. If the journal is to be used successfully with a group who has had no experience of diary writing then the overall structure and individual subjects should exemplify reflective and experiential learning where possible.

USING A JOURNAL IN VOCATIONAL EDUCATION

Given that most vocational education, at least in Australia, is part time with students spending most of their week in jobs related to their studies there would seem to be unlimited potential for the use of a journal and other experiential learning.

One example where this has already occurred is in the hospitality area in a short course for supervisors of hotel staff.

Each week supervisors are asked to undertake a journal task which focussed on such things as guest's expectations, handling of complaints, difficulties experienced by staff and so on. The journal tasks become the basis of group discussions and an action place for improving performance. In addition the supervisor course uses experiential techniques like case studies, role plays and simulations to reinforce the reflection being undertaken in the journal.

Another area in which a journal has been used is in a TAFE Welfare course where students on placement have used a journal of their activities as a basis for discussion in class.

CONCLUSION

This small study has identified some of the benefits of using a journal in developing teaching skills in trainee teachers as well as some of difficulties of implementing its use.

Using a journal has the potential in vocational teacher education to bridge the theory - practice gap and to begin the lifetime process of becoming reflective and critical about the practice of teaching. For this potential to be realized, however, careful consideration needs to be given to ways of introducing the journal to students so that is is not perceived as threatening. It is clearly essential that other parts of the program support the journal by introducing experiential learning techniques where possible. The potential for using a journal is as great in vocational education generally as it is in teacher education. Perhaps this attempt to develop the "reflective practitioner" is the first step in developing a body of knowledge about practice in all occupational education which will redress the imbalance between our knowledge of theory and practice which has been so obvious in the past.

BLOCK TRAINING FOR NSW TAFE TEACHER AN EVALUATION OVER THREE YEARS

ANTHONY WATSON

INTRODUCTION

In February 1985 a new Diploma of Teaching program for new TAFE teachers in NSW was introduced at the Institute of Technical and Adult Teacher Education (ITATE), Sydney College of Advanced Education. The new program replaced the initial Diploma of Teaching (Technical) which had been in operation since 1976.

The new program was very much influenced by the findings of certain surveys and by the well known reports which had been made on TAFE Teacher Education since 1976 (see Bibliography).

One of the major innovative features of the new program was the introduction of a block of virtual full-time study. The attendance pattern was re-structured so as to include a first term Block (12 weeks) made up of four (6 hour) days of teacher education at ITATE and one day of four hours teaching practice and two hours incidental time in a TAFE College. This feature stemmed largely from a study of the needs and problems of beginning TAFE teachers by Butterworth and Gonczi (1984).

The primary objectives of this first term block component were to upgrade basic study and research skills and to establish a satisfactory level of teaching competence and confidence among new TAFE teachers before they undertook substantial teaching responsibilities. The new program also sought to overcome some of the limitations and shortcomings which had become apparent in the old program.

An evaluation survey of the effectiveness of the first term block was carried out in May 1985. This survey established that, despite some problems with certain courses and activities, the block was generally effective in meeting its objectives. Course content, learning experiences and activities encountered in the block were generally well received and perceived as worthwhile by most students. (Watson, 1985).

A follow-up survey was carried out in May 1986. This survey indicated that the block had maintained its effectiveness in the second year of operation. In addition, it was noted that some of the difficulties encountered in 1985, with some of the courses and with some aspects of the day teaching in TAFE, were reduced or eliminated in 1986 and some of the changes introduced were successful. (Watson, 1986). A very high proportion of students (96%) reported that, at the end of the block, they felt much more confident in their roles as teachers.

One disturbing finding, however, was that 41% of the students surveyed in 1986 reported that they were still worried, at the end of the block, about the content of the syllabus which they had to teach. This compared to 35% of students who reported this concern in 1985. In addition, many students suggested that more time be given to the subject Curriculum Studies and called for a more even balance of time between teaching in TAFE and time at ITATE during the block.

In 1987 TAFE introduced an academic year of four terms divided into two semesters. The attendance pattern for new teachers was re-structured so that the first term block of 12 weeks was extended to a first semester block of 18 weeks made up of three (6 hour) days of teacher education at ITATE and two days with a total of eight hours teaching practice and four hours incidental time in a TAFE college. (The attendance pattern for semester two remained as one day per week).

This led to some important changes in the teacher education program for the block. In the first place, some changes had to be made to the content and time allocated to some of the courses. Perhaps the most significant of these was the extention of the subject Curriculum Studies from one term to one semester in length. It was anticipated that this would serve to reduce the concern that many students still felt at the end of the first term block about the content they had to teach.

The most significant change though was the extension of the one day teaching in TAFE to two days. This doubled the amount of teaching and preparation time for most teachers and, at the same time, reduced the time for full-time study at ITATE. In other words the first term semester became more like the inservice pattern which had existed prior to 1985.

A third evaluation was carried out in June 1987 (Watson, 1987). The purpose of the 1987 survey was to establish whether the block had maintained its effectiveness in the third year of operation with the change to the semester format. The matter of particular concern was whether the semester pattern would result in a more even balance of time between TAFE and ITATE and a consequent reduction in problems still associated with the term block or whether it would result in the resurrection of the conflict between the demands of teacher education and the demands of teaching which had plagued the old program.

The purpose of this paper is to report the results of the 1987 survey and to compare these with some of the more significant findings from 1985 and 1986.

THE EVALUATION INSTRUMENT

The instrument used for the evaluation in 1987 was basically the same one hundred (100) point questionnaire used in 1985 and 86 modified to suit the modified semester attendance pattern.

The questions called on students to evaluate the courses and certain aspects of the program on a five point scale, to indicate degrees of satisfaction or dissatisfaction with various aspects or to agree or disagree with various value and factual statements about the program. Provision was also made for write in evaluative comments and write in responses about the program as a whole.

This time, however, a number of items were modified and certain new items included which sought to evaluate those areas noted by Field as sources of dissatisfaction in a survey of first and second year teachers in 1986.

These included such matters as:

- Coverage of practical 'how-to-do-it' information
- Variety of teaching and learning methods used
- Relevance of assignment work
- Challenge and stimulation provided by the program
- Extent to which ITATE lecturers practice what they preach
- Recognition and use of the life experience of students

The questionnaire was administered in class time during the last week of Semester One, 1987.

THE SAMPLE

Completed questionnaires were obtained from 160 students who had completed the first semester of the Diploma of Teaching program in 1987. These were all new non-graduate teachers (male and female) representing 54 teaching disciplines and 19 teaching schools in TAFE. During the semester most students in the sample taught for two days a week in metropolitan or near metropolitan TAFE colleges. Included in the sample were 23 teachers who taught in country colleges throughout the state. These teachers were accommodated in Sydney for the three days of teacher education at ITATE and then returned to their colleges each week for two days of teaching.

The ages of students surveyed ranged from 20+ to 59 years. 80% of students and 10 or more years of industrial experience before taking up teaching. Most of the students had little or no previous teaching experience.

The nature of the sample compared quite closely with the 84 students surveyed in 1985 and the 61 surveyed in 1986.

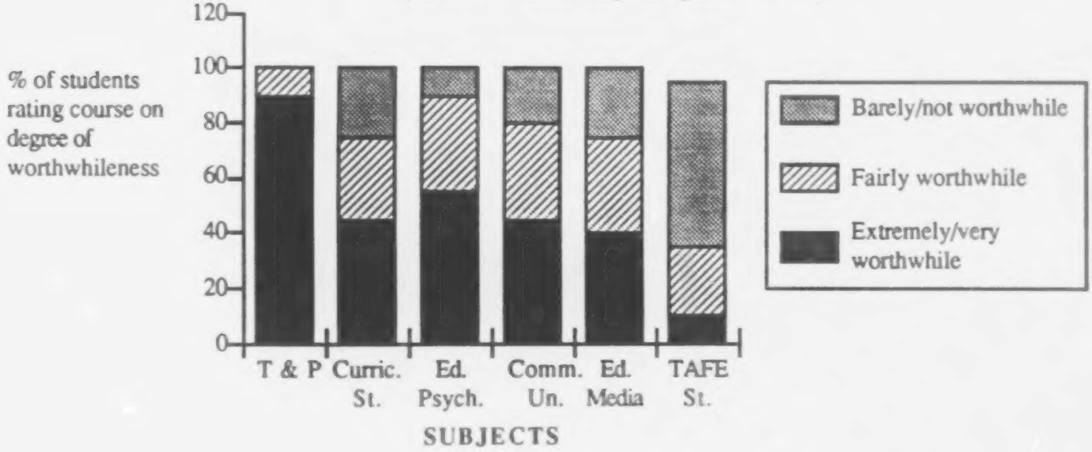
RESULTS

Some of the more significant findings from the survey, relating to each aspect of the block studied, are presented below. These are compared with the related findings from 1985 and 1986.

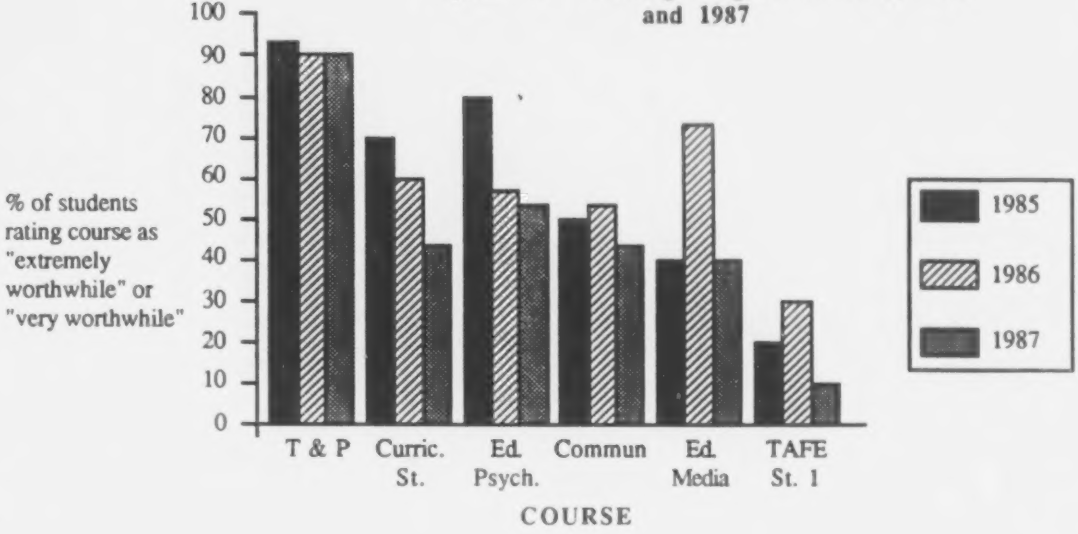
PART A: COURSE CONTENT

Findings in this section were mixed and in some cases not quite as pleasing as they were in 1985 or 1986. (See Graphs 1 and 2)

GRAPH 1: Student Perceptions of Course Content in the Diploma of Teaching Program in 1987



GRAPH 2: Student Perceptions of Course Content in the Diploma of Teaching Program in 1985, 1986 and 1987



The courses rated most favourably over the three years were Theory and Practice of Teaching, Educational Psychology and Communications and Study Skills. In 1987 a very high 90% of students rated Theory and Practice of Teaching as very to extremely worthwhile and over 80% of students rated Educational Psychology and Communications as fairly to extremely worthwhile. This was a similar pattern to the ratings in 1985 and 1986 except for Educational Psychology which was given a higher rating in 1985.

Courses with more uneven ratings were Curriculum Studies and Educational Media. In 1987, approximately 25% of students expressed dissatisfaction with the worthwhileness and relevance of Curriculum Studies and Educational Media. However it must be said that approximately 75% rated the courses as fairly to extremely worthwhile and fairly to extremely relevant. The rating for these subjects were not as high as in 1985 and 1986.

The course with the really disappointing rating over the three years however was TAFE Studies I. Over 50% of the students surveyed rated this course as barely or not worthwhile and barely or not relevant in 1987.

The negative ratings for Curriculum Studies and Educational Media can be attributed in part to some very uneven ratings from group to group. In some cases the ratings for these two subjects are quite high. This is particularly true for Curriculum Studies which was taught by approximately 50 part-time tutors. Further analysis of the results for each group is required to trace the specific sources of dissatisfaction in these two subjects.

This is not the case, however, in TAFE Studies I. Here the ratings are disappointing for almost every class group - with only one or two exceptions. Furthermore, these disappointing ratings were consistent with those found for this subject in 1985 and rather negate the small improvements demonstrated in 1986. Clearly the validity of this course and its content and rationale must be closely examined.

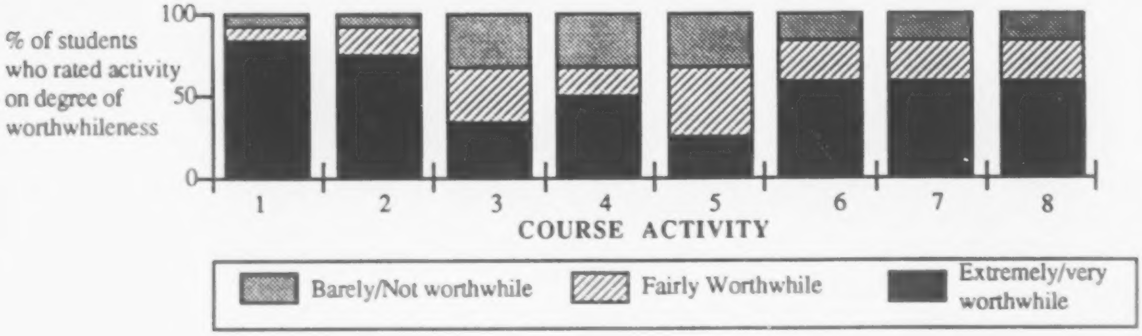
Analysis of the responses to the write in questions calling on students to list the most and least useful topics in each subject reveals a consistent pattern over the three years. Practical or survival activities such as lesson preparation and presentation, writing lesson objectives, writing skills and using the overhead projector tend to be seen as of the utmost importance.

PART B: COURSE ACTIVITIES AND ASPECTS

For the third year in succession, observation of teaching practice and follow-up counselling by group advisers were the most highly rated course activities. (See Graphs 3 and 4). Approximately 80% of students found these to be extremely or very worthwhile. Other activities which received favourable ratings were microteaching and demonstrations on audio visual hardware/software although not as high as in 1986.

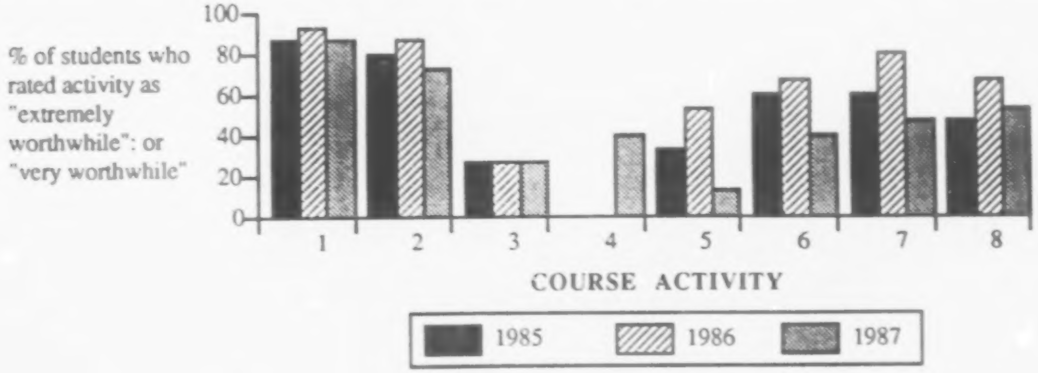
GRAPH 3: Student Perceptions of Course Activities in the Diploma of Teaching Program in 1987.

1. Supervision of teaching prac.
2. Follow-up discussion.
3. Study skills session in library.
4. Yarrawood Conference
5. Guest speakers from TAFE.
6. Microteaching, peer grp eval.
7. Microteaching, grp adv. eval.
8. A.V. demons.



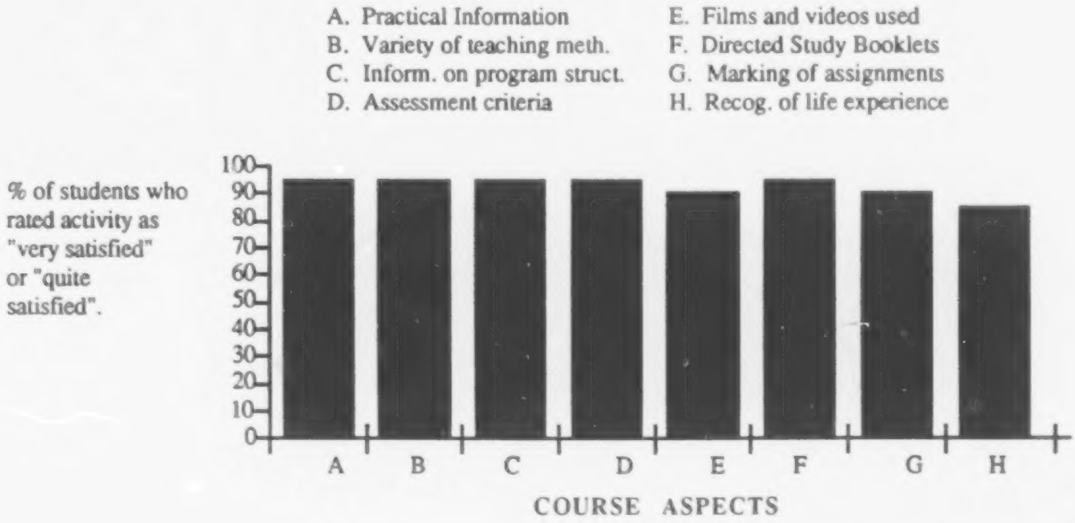
GRAPH 4: Student Perceptions of Course Activities in Years 1985, 1986 and 1987.

1. Supervision of teaching prac.
2. Follow-up discussion.
3. Study skills session in library.
4. Yarrawood Conference
5. Guest speakers from TAFE.
6. Microteaching, peer grp eval.
7. Microteaching, grp adv. eval.
8. A.V. demons.



It is very pleasing to record, however, that many of the aspects of the course noted by Field in 1986 as sources of dissatisfaction were seen as quite satisfactory in 1987. (See Graph 5).

GRAPH 5: Student Perception of Course Aspects in 1987

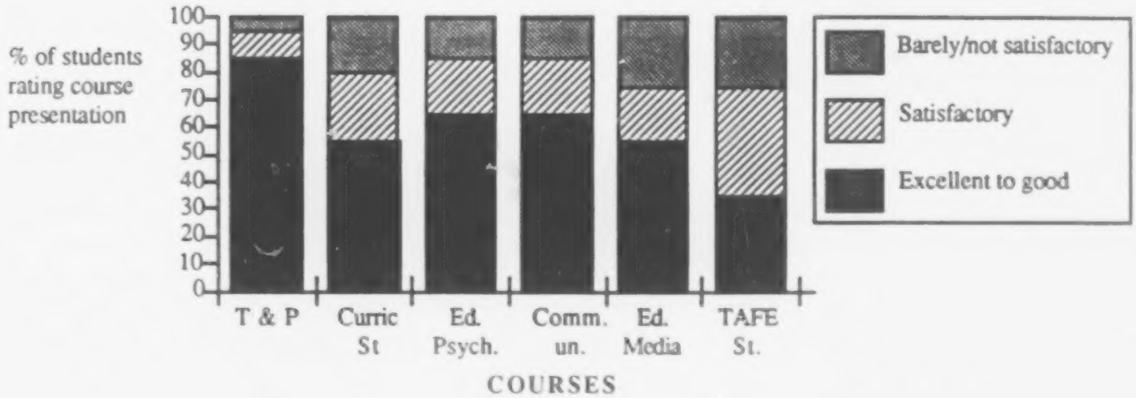


More than 90% of the students surveyed indicated that they were very or quite satisfied with the following course aspects: coverage of practical 'how to do it information'; the variety of teaching and learning methods used; clarity of information about program structure; availability of assessment criteria and requirements; quality of marking and comments on assignments. In addition 90% of students were quite or very satisfied with the quality of training films and videos and study booklets produced by Institute staff. 80% of students indicated that they were very or quite satisfied with these aspects in the first semester in 1987.

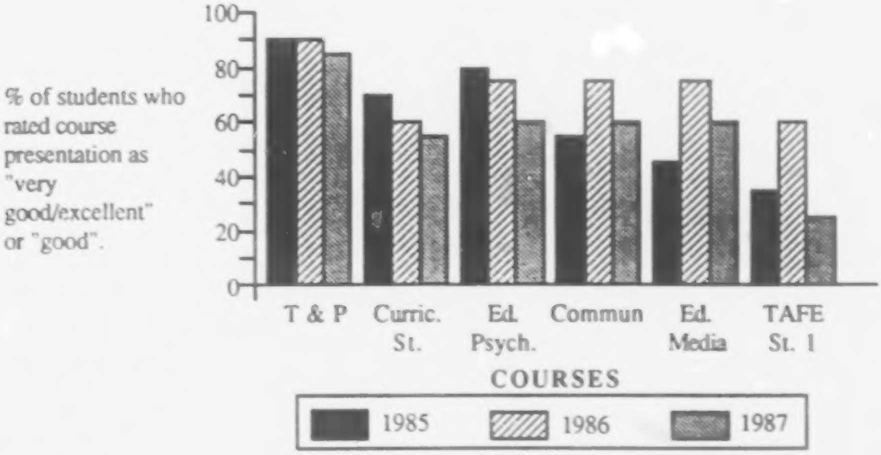
PART C: PRESENTATION

Ratings for course presentation in 1987 were not quite as high overall as in 1985 and 1986, and are somewhat similar to the ratings on course content. (See Graphs 6 and 7).

GRAPH 6: Student Perceptions of Presentation Methods used by Lecturers in the Diploma of Teaching Courses in 1985, 1986 and 1987



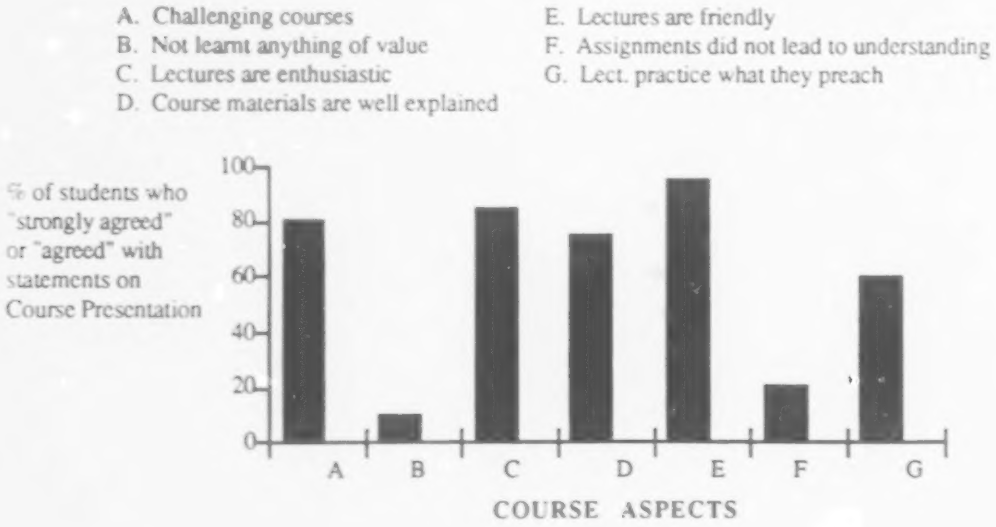
GRAPH 7: Student Perceptions of Presentation Methods used by Lecturers in the Diploma in Teaching Courses in 1985,1986 and 1987



This pattern of ratings for presentation suggests a not unexpected relationship between the presentation of a course and the perception of its worthwhileness and relevance. The exact nature of this relationship, however, requires much closer analysis.

Responses to the general statements on presentation, on the other hand, were quite pleasing (See Graph 8). Over 85% of students said that lecturers were friendly and enthusiastic about teaching their courses and more than 75% of students felt that courses were intellectually challenging and stimulating and that course materials were well prepared and carefully explained. In addition over 90% of students disagreed with the statement that they had not learned anything of value and approximately 80% disagreed with the proposition that assignments did not contribute to an understanding of the subjects. One troublesome finding is that about 30% of the students disagreed with the proposition that ITATE lecturers in general practice what they preach. while this is nowhere near as negative as the Field finding that 70% of students were dissatisfied with this aspect, it still represents due cause for concern. It can be attributed in part to the varied expectations which students have of tertiary teaching and in part to the fact that some lecturers attempt to model the teaching techniques which are taught to TAFE teachers while others, for various reasons, do not. The most frequent write in comment, on this question was 'some do - some do not'.

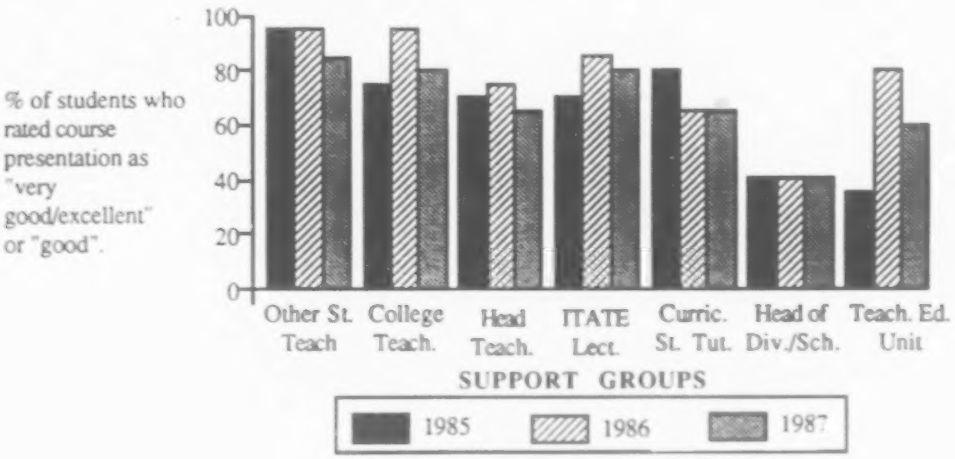
GRAPH 8: Student Perception of Aspects of Course Presentation in 1987



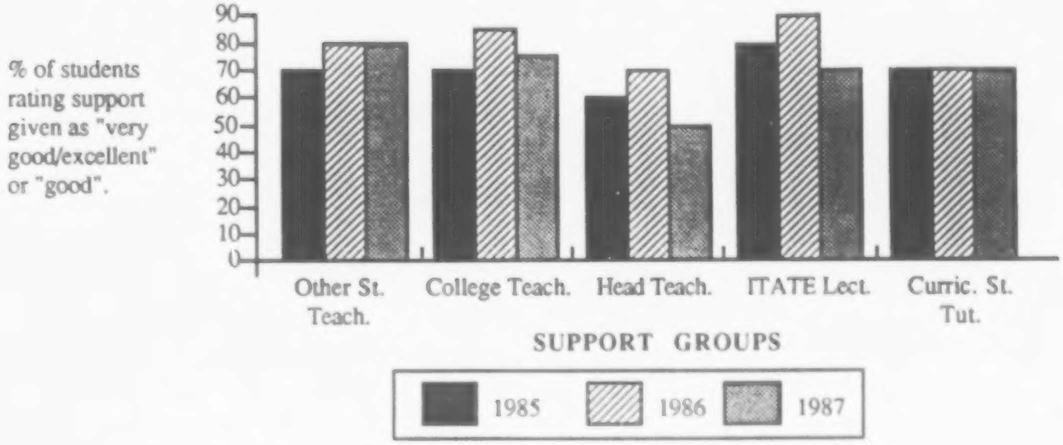
PART D: SUPPORT

In 1985 and 1986, the students as new teachers in TAFE reported that they received good support in relation to 'settling in' to TAFE, obtaining or developing teaching resources, and advice on teaching and class management from sources such as fellow teachers, head teachers ITATE lecturers and curriculum studies tutors. The Teacher Education Unit was seen as giving ITATE lecturers and curriculum studies tutors. The Teacher Education Unit was seen as giving good support to teachers 'settling in' to TAFE in 1986. This level of support was generally maintained in 1987. Again though, the best sources of support on many of these matters were seen to be fellow teachers in training or at the college and ITATE lecturers. (See Graphs 9, 10 and 11).

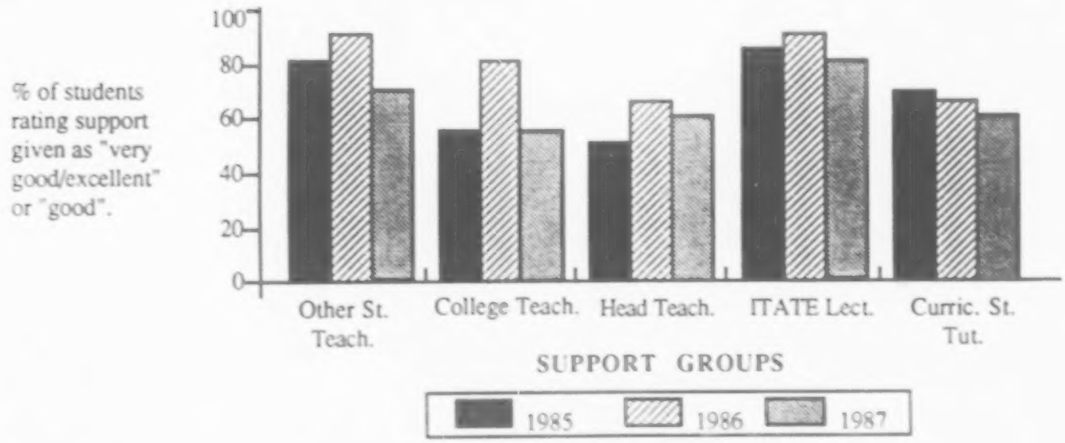
GRAPH 9: Student Perceptions of the Extent of Support Given to Them in "Settling-in" to TAFE and Coping with TAFE Duties in the years 1985, 1986 and 1987.



GRAPH 10: Student Perception of the Extent of Support Given to Them in Obtaining or Developing Teaching Resources.



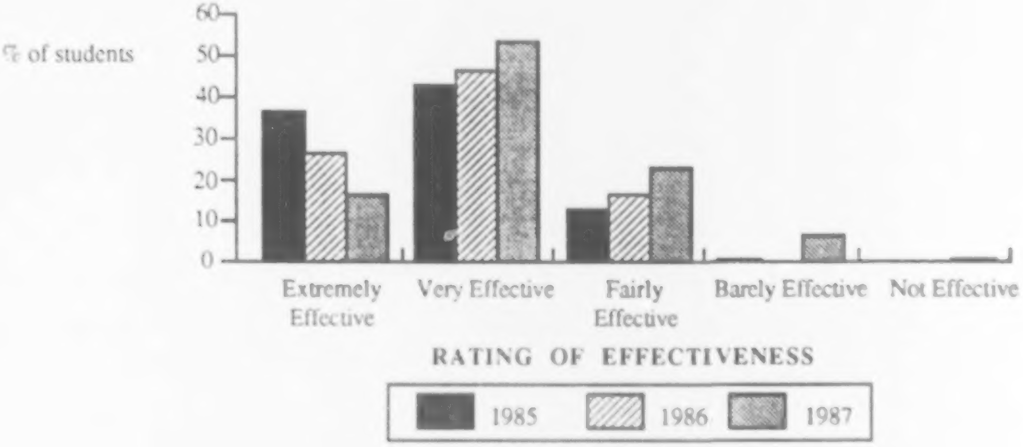
GRAPH 11: Student Perception of the Extent of Support Given to Them in Respect of Advice on Teaching and Class Management Techniques in the years 1985, 1986 and 1987.



PART E: OVERALL EFFECTIVENESS

In general the semester block was seen to have overall effectiveness like the term blocks in 1985 and 1986. (See Graph 12).

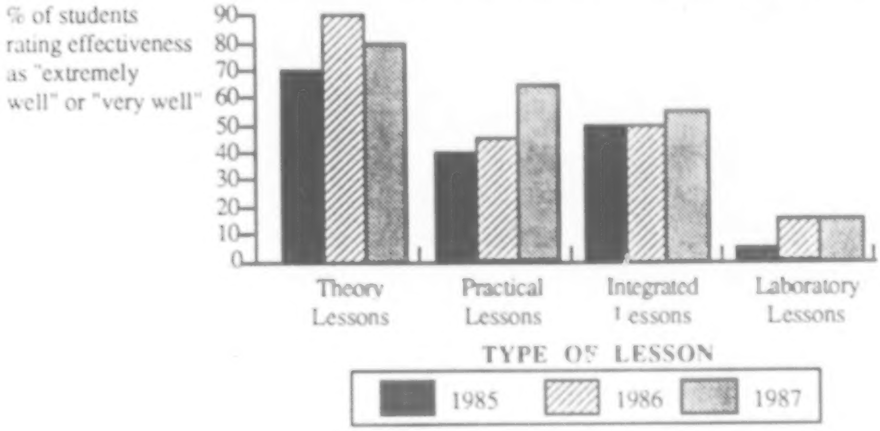
GRAPH 12: Student Perceptions of The Effectiveness of the 1st Semester Block of the Diploma in Teaching Program in 1985, 1986 & 1987.



74% of students surveyed in 1987 considered the semester block to be very or extremely effective and only 5% considered it to be not effective. In addition, responses to other questions indicated that 97% considered the block to be a useful experience, 88% found it to be an enjoyable experience and, as already noted, 93% disagreed with the proposition that they had learned nothing of value from the block. These responses are similar to those in 1985 and 1986.

In relation to particular types of lesson performance, the block was again found to be most effective in preparing teachers to teach Theory lessons. (See Graph 13). This time, however, the block was found to be much more effective in preparing teachers for Practical lessons than in 1985 or 86. (66% reported the block to be very or extremely effective for Practical lessons compared to 42% in 1986). This was no doubt due to the change to the semester format which led to the modification of the Theory and Practice of Teaching course to allow for more time in the semester block on the teaching of practical skills.

GRAPH 13: **Student Perceptions of The Effectiveness of the 1st Semester Block in Equipping Teachers for Classroom Performance in Different Types of Lessons in 1985, 1986 and 1987.**



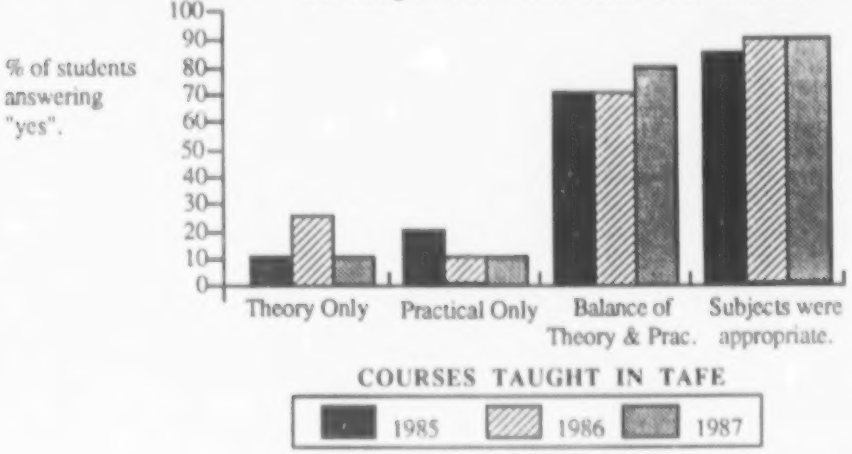
PART F: THE TWO DAYS TEACHING IN TAFE

In 1985 and again in 1986, the majority of students surveyed felt that the day teaching in TAFE was a useful and valuable experience (92% and 90% respectively). However, a number of problems did emerge in the colleges in 1985. These concerned such matters as: not being provided with adequate resource materials, not being made to 'feel at home', not having time or opportunities to observe other teachers and being given Theory or Practical classes only.

Generally, improvements noted in relation to these aspects in 1986, have been maintained in the two days teaching experience provided in 1987. 99% of students reported that they found the two days teaching in TAFE to be useful and valuable. 81% reported that they were given an adequate copy of the syllabus and good access to media, laboratory and practical equipment. 79% reported that they were given advance notice of teaching changes and 97% reported that they were made to 'feel at home'. Again though, there were still a large number of students (41%) who felt that they were not provided with adequate resource materials.

Most importantly, however, a very low 10% of students and 11% respectively reported that they taught Theory or Practical classes only. Moreover, 89% reported that they taught a balance of Theory and Practical classes and 93% felt that the classes and subjects taught in the block were appropriate. This represents an improvement on both 1985 and 1986 and can be attributed in part to the increased opportunities for a balanced teaching program provided by the two days in the colleges. The efforts of the **Teacher Education Unit** towards this end should also be acknowledged here. (See Graph 14).

GRAPH 14: Student Perception of the Appropriateness of Their Teaching in the Years 1985, 1986 and 1987

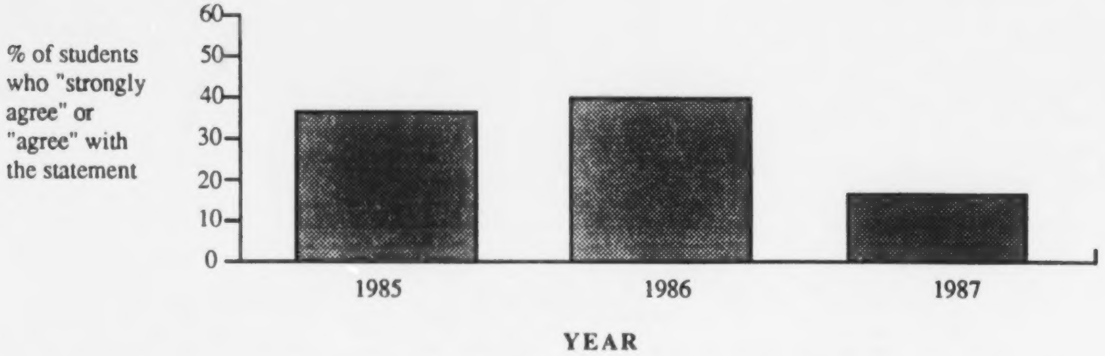


PART G: MISCELLANEOUS

As in 1985 and 1986, the responses in this section strengthen the impression that students found the block program to be a useful and generally enjoyable experience. 90% of students felt that the semester block had had a significant influence on their development as teachers and 88% reported that they now felt much more confident in their roles as teachers. Interestingly, 79% also reported that they had benefited from the strand on basic study skills. These findings suggested rather strongly that the first semester block is achieving its basic or primary objectives.

This time, moreover, only 14% of students reported that they were still worried at the end of the block about the content they had to teach, compared to 41% who reported this worry at the end of term block in 1986 and 35% in 1985. (See Graph 15). This finding suggests that the increased teaching practice together with the increased time for Curriculum Studies may have been successful in alleviating this problem which was very noticeable in 1985 and 1986.

GRAPH 15: Student Perceptions of their Agreement with the Statement "I am still worried about the content of the syllabus I have to teach"



One of the most interesting findings in this section, however, emerges from the responses to the statements on teacher education assignments. This was an area where the Field survey had found a good deal of dissatisfaction with both the assignment load and their relevance. This time, however, the findings relating to assignments are more favourable. 84% of students agreed that teacher training assignments were relevant to what they needed to know, 78% said that they had adequate time to complete assignments and 79% disagreed with the statement that assignments were too difficult.

It is possible that improved assignments were set in 1987 and that they were more evenly spread throughout the block. It is also possible that the main concern over assignments may not show up until second year.

The worrying finding in this area, though, is that 65% of students considered that they did **not** have adequate time to plan their lessons for the two days teaching in TAFE. This compares unfavourably with the 37% of students who reported this concern in 1986 and would appear to be a direct outcome of the increase in teaching time in the blocks from 1986 to 1987. It may also be a reflection of an increase in conflict between the demands of teaching and the demands of teacher education which was not so apparent in the term length blocks in 1985 and 1986.

Whatever the cause, this is a problem which must be given careful consideration by both the course revision committees form ITATE and the Teacher Education Unit from TAFE.

THE WRITE-IN RESPONSES

In general, responses to the open-ended questions tend to support the impressions gained from the body of the survey.

The courses mentioned most frequently as the most satisfactory were Theory and Practice of Teaching, Communications and Study Skills, Educational Psychology and Educational Media. The most favoured aspects were practical aspects such as lesson planning, writing objectives, lesson observation and counselling. Other favoured aspects tended to be in the affective domain such as opportunities for personal development, interaction with peers and the development of confidence. These responses are similar to those in 1985 and 1986.

The least satisfactory aspects were seen to be the course: TAFE Studies 1, some aspects of Curriculum Studies and lack of instruction and direction in some areas in Educational Media. Other unsatisfactory aspects mentioned frequently were lack of adequate time for preparing lesson plans, time wasting in class, and time spent on travel to and from classes by the country teachers.

Students' perceptions of the ideal major objectives of the block generally agree with our own. Those most frequently mentioned related to teaching skills, lesson planning, classroom management and the development of confidence in teaching.

Those areas where students felt they required more time included classroom management, questioning techniques and practical lessons. The area which most students felt could be reduced or omitted was the TAFE Studies area. One interesting suggestion coming from more than one student was that the important aspects of TAFE Studies would be better treated in a day long block which would leave more time for other activities. This is a suggestion which merits further consideration.

CONCLUSION

It is apparent from various responses to the evaluation survey that the block program in 1987 was generally successful as it was in 1985 and 1986 in achieving its primary objectives. Students again felt that they had developed confidence and competence in teaching by the end of the block and that they had benefited from the attempt to improve their basic study skills. These impressions were confirmed by our own observation of their teaching performance in the TAFE colleges and by our observation of library use and assignment performance.

It was noted that some aspects of the course work for the semester block were not rated as highly as in the term length blocks of 1985 and 1986 and the change to the semester pattern may have caused some students to feel that they had inadequate time to prepare lessons for the two days teaching in TAFE. The new pattern however seems to provide a more even balance of time between teaching in TAFE and time at ITATE and this may have contributed to the reduced number of students who expressed concern about their technical subject matter at the end of the block.

In addition, many of those sources of dissatisfaction noted by Field in 1986 were not apparent in 1987. In particular, few complaints about assignment load were noted relating to the semester block.

Of course it must be emphasised that the generally favourable response to the block program is a short term one based very much on teachers' initial impressions and perceptions. The real and permanent impact of the block on competence in teaching and on study skills can only be assessed through further long term study. Nevertheless there are enough indications in the surveys carried out in 1985, 1986 and 1987 to confirm the potential of the block approach for new TAFE teachers and to justify a claim of success for this interesting and major innovation. Furthermore, some adjustments to content and method should ensure that some of the problems with the semester pattern are corrected, while retaining its advantages.

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THE LEARNING CONTRACT METHOD AS A MEANS OF DEVELOPING SELF-DIRECTED LEARNERS : EVALUATION, STUDY AND IMPLICATIONS FOR THE DEVELOPMENT OF ADULT EDUCATORS

G BENNETT & L FIELD

INTRODUCTION

This paper examines the ways in which ITATE has attempted to foster student readiness for self-directed learning through the learning contract method in its associate diploma programs. One particular program which employs the learning contract method - the Associate Deploma in Adult Education (Training) - is examined in detail and the mechanisms which are intended to encourage self-direction are discussed. The paper concludes with an attempt to briefly answer two central questions concerning these efforts, viz, firstly, is self direction compatible with constraints imposed by a College of Advanced Education, and secondly, to what extent are the intended outcomes relating to the development of students who are more self directed actually adhered?

THE DEVELOPMENT OF SELF-DIRECTED LEARNERS

A major objective of the Trainers Program is the development of the adult as a self-directed learner. Whilst the structure adopted for the program is influenced by a number of other factors, it is the promotion of the skills of self-directed teaming that is the central feature of the program design.

Influenced by the research and literature supporting the idea of self-directed learning for adults (Johnstone and Rivera, 1865; Houle, 1972; Knowles 1975;1978, 1980; Boud, 1981; Mezirow, 1981.) the program design recognized that continuing professional and vocational education is not only about developing relevant work-related knowledge and skills, but should also be concerned with the development of the training practitioner as a self-directed learner.

The importance of developing independent and self-directed learners and in helping students learn how to learn is now well documented (e.g., Knowles, 1975; Smith and Haverkamp, 1977, Boud, 1981; Brookfield, 1982.) Such authors point out that the most valuable thing a graduate should learn is how to learn and Day and Baskett (1982), in talking about continuing professional education, suggest that adult educators "should see that professional schools take action to ensure that graduates leave with a spirit of continual enquiry and a dedication to professional development." A number of other studies suggest that self-planned learning is the preferred learning approach for adults. Johnstone and Rivera (1965) in their survey of adult participation in learning, while not directly concerned with self-directed learning, detected it in such quantity that they suggested it was the most neglected area of adult learning research. Tough (1971) has documented the considerable number of self-planned learning projects carried out by adults. McCatty (1975), in a study of professional men, records the high incidence of the use of job-related self-planned learning projects while Lusterman (1977) has noted the frequent use of individual methods of instruction and self-programming in work-related education.

Self-directed learning represents the ultimate state of learner automony i.e. the learner exercises major control over, and responsibility for choosing both goals and the means of the learning. Self-directed learning is a process in which individuals take the initiative, with or without the help of others, to acquire certain definite knowledge or skills ((Knowles, 1975; Smith and Haverkamp, 21977; Cross, 1981). While self-directed learning as an instructional mode is well defined and generally accepted, the problem with terminology persists. Tough (1971) identified this as self-planned learning but also has described it as self-teaching. Brookfield (1981) deploring the "plethora of definitions ..... individualized learning, self-teaching, autonomous learning, autodidactic activity, isolated learning" settled for the term independent adult learning. Cross (1981) joined the growing trend in calling it self-directed learning, the term that is used here and that seems most likely to be used in the future.

The notion of autonomous, self-directed learning has been a recurrent and dominant theme in the literature of adult education. Adult educators have for some time viewed the promotion of self-directed learning as a major or goal of adult education (Knowles, 1975; Mezirow, 1981). Mezirows's "Charter for Andragogy" is quite explicit in enumerating the procedures that adult educators need to adopt to "assist adults to learn in a way that enhances their capability to function as self-directed learners" (Mezirow, 1981). Knowles (1975) maintains that it is in the use of those techniques and methods which involve the individual most deeply in self-directed enquiry that produce the greatest learning. The task of the adult educator, according to Knowles, is in "inventing techniques for involving adults in ever deeper processes of self-diagnosis of their own needs for continued learning."

Advocates of self-directed learning point to the speed with which knowledge and skills acquired today are quickly out-of-date and argue that no course of learning can equip the individual to deal with a future characterized by continual change. With the increasingly rapid expansion of knowledge what is needed is people who are able to find things out for themselves when confronted by the sheer size and complexity of any field. Independent study and the ability to track down information becomes important. In educational terms future society needs citizens who are self-directed, not other-directed, and who have the skill of recognizing what they need to know and the capacity to find out how to learn it. Such learners need, and will use, a wide variety of different learning strategies. They will need to be independent learners in the fullest sense (Geffen, 1984).

The need for self-directed learning skills in the work-place is underlined by the dramatic upheaval brought about by the impact of technological change. The ability to direct one's own learning effectively is seen as an essential requirement if the individual is to cope with the demands of a continually changing work-place. In a time of uncertainty and change it is unlikely that any program of continuing vocational education can equip the learner with the knowledge and skills to meet all the future demands likely to be placed on the individual in the work-place. The future success of continuing professional and vocational education courses will be judged by how well they have helped people become well motivated and competent self-directed learners.

A commitment to the fostering of self-directed learning as a major objective of continuing vocational education has obvious implications for the design of work-related courses. A feature of such courses will be a shift from a subject-based, content-led approach to an increasing focus on the processes of learning. Todd (1984) has pointed out that content-led courses provide only short-term solutions since much content is soon out-of-date leading to "a continuously repeated cycle of updating and slipping out-of-date and more updating." By contrast those curriculums and programs whose primary goal is to promote the self as an active and self-directing learner address the longer-term perspective. Whilst the content of what is learned may change from time to time, the individual's acceptance of responsibility to use continued learning and self-development to maintain good practice will continue. Unlike the closed strategy of content-led courses, approaches incorporating the goals of self-development and self-directed learning and open-ended.

THE LEARNING CONTRACT METHOD

The Trainers' Program, by including as one of its major objective the promotion of self-directed learning, sets out quite directly to develop the skills of self-directed enquiry. The curriculum design incorporates the use of the "learning contract" as the mechanism for facilitating the development of self-directed learning skills.

A learning contract is a written agreement reached between a student and member of a staff or a committee. The agreement governs both the amount of student work or learning to be undertaken, and the amount of credit which the institution will assign. The completion of learning contracts requires the trainer to deveop such skills as identifying individual learning needs; expressing these needs as learning objectives; devising realistic learning strategies; identifying appropriate resources; and, establishing criteria by which the learning might be evaluated.

The literature of higher education contains numerous examples of programs such as the Trainers Program which use learning contracts as a means of supporting the development of self-directed learning skills. For example, they have been used as a basis for college arts and education degree programs (e.g. Eldred, 1984) and for nurse education (e.g. Buzzell & Roman, 1981). They have been used as the sole means of planning work, (e.g. Berts, 1975). Learning contracts have also been experimented with in the vocational training (1984) includes several examples - and in Australia (e.g. for staff development within the Department of Aviation (Jackson et al., 1983)).

Whilst it is accepted that adults may have a need for greater self-directedness in learning, the Trainers' program design does not assume that all adult learners are self-directed learners at the outset. Examples of adult dependence on the teacher are not difficult to find and many adults, particularly when entering novel learning situations, begin with dependent-type behavious (Brundage and MacKeracher, 1980). Trainers on entering the course are likely to exhibit a range of individual differences in their degree of automony or self-direction. The course regards self-directed learning as the outcome of a developmental process and as such is not some absolute standard to be met but an objective to be pursued. This view of self-directed learning has strong support in the literature. Boud (1981) points out the "the only realistic goal for higher education is that students should be more autonomous when they leave the course than when they enter, not that they will have reached some arbitrary point along some established continuum of automony".

This view of the acquisition of self-directed learning skills as a developmental process is also consistent with the findings of researchers into the stages of intellectual development (e.g. Perry, 1979), moral development (e.g. Kohlberg, 1972), ego development (e.g. Loevinger, 1976) and psychological change during therapy (e.g. Meltzer, 1867). For example, in Loevinger's view of the stages through which one moves during adulthood, only the last stage - autonomy - provides a sound basis for self-directed learning. In addition, the writings of these authors emphasize that developmental stages are neither neatly separate, nor simple to traverse. As Mulford (1983) says :

> Movement from one developmental stage to the next occurs through cycles of challenge and response, cognitive dissonance, cultural discontinuity, differentiation, and integration. (p. 101).

Because of the view that "self-directedness" is an idealized endpoint of adult development, and that the attainment of this endpoint is an ongoing process, the Trainers' program is structured so as to gradually encourage students to be more self-directed. It is assumed that most trainers will acquire greater independence in developing and completing learning contracts as they progress through the program.

The use of learning contracts does not mean that trainers work on their own in isolation from others. The use of negotiated learning contracts as a central feature of the program for trainers necessarily involves more frequent one-to-one contracts between trainers and staff or supervisors. However the curriculum design does recognize a role for both structured teaching and opportunities for trainers to work with their peers. Classroom teaching and classroom group learning activities are not seen as being incompatible with the development of independent learning. The program attempts to achieve an integration of expertise through staff input and trainer experience, while at the same time promoting their skills of independent self-directed learning through the use of learning contracts, within the frame work of their course objectives and the needs arising from the demands of the trainer's work environment.

TWO KEY ISSUES ASSOCIATED WITH THE TRAINERS' PROGRAM

The discussion so far has concentrated on the nature of the Trainers' program and the mechanisms it has incorporated in an attempt to foster self-directedness. The program itself commenced in 1983, and in the ensring years, those involved have had time to evaluate whether the reality has matched the initial expectations.

In the remainder of this paper, two issues are discussed which have arisen from these evaluations and which have widespread implications for higher education programs which attempt to use self-directed learning principles. These two issues are :-

- Whether self-directed learning principles are compatible with educational institutions and the constraints which they impose and

- Whether students' levels of self-directedness do increase markedly during programs such as the Trainers' program.

Each of these issues is discussed in turn.

SELF-DIRECTED LEARNING WITHIN EDUCATIONAL INSTITUTIONS

There is a considerable body of literature describing the application of self-directed learning principles to educational programs within institutions, such as nurse training establishments (e.g. Cooper, 1980), prisons (e.g. Boucouvalas & Pearse, 1982), and universities and colleges (e.g. Boud, 1981).

Nevertheless, Candy (1986) has raised the question of whether self-directed learning can ever be made available within an institutional setting. Candy emphasizes the need to distinguish between self-directed learning associated with the independent pursuit of learning outside formal institutions, and self-direction as a way of organizing instruction. The difference between the two, according to Candy, relates to ownership of knowledge. Within an institutional program aimed at self-direction :

> There is still a residue, albeit small, of teacher direction. Even though the instructor might have all but vanished, the "ghost" of the instructor lingers on, subtly influencing the learner's choices, and even the criteria he or she uses make those choices. (1986, p 314).

The observation that institutions always retain some control over program content, assessment standards, and so on, is a valid one. Programs such as the Trainers' program at ITATE do not allow total student self-direction, and nor are traditional programs such as the Dip. Teach, completely "teacher-controlled". In reality, such programs exist along a continuum somewhere between these two extremes.

In order to gauge where along such a continuum the Trainers' program might be, it is helpful to refer to the results of a study conducted at the Department of Adult Education of the Ontario Institute for Studies in Education (OISE) (Herman, 1980). This study analysed student perceptions of the various instructional approaches they had experienced at OISE. Of the five approaches used at OISE, the learning contract method was seen as giving students the most control over their learning, with ratings for each of the two student groups studied of between 5 and 6 on a 7-point scale.

Thus, whilst it is true that institutions such as ITATE do exercise control over students and programs, both covertly and overtly, it is nevertheless possible to give students a great deal of scope for self-direction using the learning contract method.

CHANGES IN LEVELS OF SELF-DIRECTEDNESS

During 1986 and 1987, a piece of research was carried out at ITATE which compared changes in readiness for self-directed learning readiness over a nine month period between two programs, namely the Trainers' Program has already been discussed at length. The Dip. Teach. is a program for beginning TAFE teachers, and is characterised by learning objectives, lectures, seminars, lectures - planned assignments and norm-referenced assessment.

The instrument used to measure readiness for self-directed learning was Gugliemino's self-directed learning readiness scale (SDLRS). The SDLRS is a self-report scale comprising 58 Likert-type items and such as "I love to learn" and "I don't work very well on my own". Respondents indicate their level of agreement or disagreement with each item.

The SDLRS is the most widely accepted means of quantifying readiness for self-directed learning currently available. The scale has been used in numerous research studies in the United States and in several other countries. These studies include more than 20 doctoral dissertations and a major study at a large communications utility (Gugliemino & Guglielmino, 1983).

On the basis of initial analysis of the SDLRS data, it was decided to only use an abbreviated version of the full scale. Using stepwise regression analysis, 22 items were selected which, taken together, were able to account for more than 95 percent of variance in the total SDLRS scores. In the remainder of the discussion, this 22 items version of the SDLRS is termed the Abbrev. SDLRS.

The Abbrev. SDLRS was administered in March, 1986 and again in November, 1986, to a large sample of students in the Dip. Teach. and to all students in the Trainers' program (Figure 2).

In addition, the March instrument incorporated questions dealing with the students' work experience, familiarity with self-directed learning and other personal characteristics such as age and qualifications. The November instrument included a set of detailed questions regarding satisfaction with various aspects of the program which the student was undertaking.

DISCUSSION

Because of these anomolous findings, a subsequent phase of research was undertaken in an effort to understand the results. This phase utilized additional detailed analysis of the Abbrev. SDLRS data as well as other data concerning students' self-assessed competency levels as self-directed learners, the data from the November questionnaire relating to student satisfaction, and several recent studies reported in the literature. A paper detailing the findings of this later stage of the research is in preparation and this contains substantial evidence to support the following conclusions:

(i) The SDLRS is not a valid or reliable measure of readiness for self-directed learning, despite its use in numerous studies in education and industry. Indeed, the structural and other problems with the scale are so fundamental, and have such marked impact on its validity, that no conclusion can be drawn from Total (Abbrev. SDLRS) scores.

(ii) In each of the two programs examined, the average level of self-directedness amongst students was quite high. The problem for programs such as these is therefore not so much the cultivation of readiness for self-directed learning, as its preservation.

(iii) The greatest differences between the two programs examined were found in student satisfaction. The levels of student satisfaction were significantly higher in the Trainers' program than in the Dip Teach. program, and the factor which most commonly accounted for these differences was the availability of structures (such as the learning contract) which enabled student self-direction.

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WORKSHOP P

Theme: The ITATE papers: Modelling and applying techniques appropriate for effective adult teaching/learning.

Section 4: Future directions.

Thursday March 16. 3.30 pm.

Adelaide Room 2

Hank Schaafsma. *The Organisation and Development of a Relevant Research Program: The ITATE experience to 1988 and beyond.*

Paul Hager. *Critical Thinking as a Prerequisite for Reflective Teaching.*

Dr. Michael Kay. Head of School of Technical and Adult Teacher Education. *Future Directions in Research in Vocational Teacher Education.*

SECTION 4 -FUTURE DIRECTIONS

Hank Schaafsma's paper argues that ITATE has reached a level of maturity where its research into vocational education needs to be more organised and coordinated. He identifies emerging trends in ITATE's work and the implications of these for research. He suggests a need for two 'research centres' and outlines the possible research areas that they would investigate.

Paul Hager's paper discusses the widespread interest in reflective thinking in teacher education programs. He suggests that while there appears to be some disagreement about exactly what reflection is, it clearly includes a capacity for significant critical thinking skills. He goes on to discuss ways in which critical thinking skills can systematically be improved and suggests some possibilities for research and development in this field.

Michael Kaye concludes this section with a plea for vocational teacher educators to concentrate their research and scholarly endeavours on teaching and learning, which is, after all, the prime focus of their work. Innovative teaching and learning practices, of the kind outlined in the preceding papers, need more systematic investigation and reporting in the literature.

THE ORGANISATION AND DEVELOPMENT OF A RELEVANT RESEARCH PROGRAM : THE ITATE EXPERIENCE TO 1988 AND BEYOND

HANK SCHAAFSMA

This paper provides an overview of how one Institute for training TAFE teachers and adult educators is moving in new directions in various fields of research and development devoted to vocational education. In particular, the organisation and development of a research program at ITATE will illustrate three important new trends. First, we can trace a gradual theoretical shift in research paradigms that increasingly focuses on the 'critical and reflective' dimensions of research together with the traditional emphasis on the empirical and interpretive studies. Second, research at ITATE is seeking new ways of developing teachers as researchers in collaboration with tertiary institutions and with industry. New models of 'action research' are being used to empower groups of teachers, adult educators and trainers to address the real problems of course development, implementation and evaluation. Third, this institution has developed a research management plan that is designed to link the interests of staff (in R & D) with emerging priorities for funding research at the state and national levels.

During the past two years, important new questions about the future directions for research and development in education have been raised. In the context of massive structural changes in the higher education sector (generated by the White Paper and other national initiatives), what evidence is there that funding for research and development in vocational education will increase in future? According to Professor Fasano, " .... on every conceivable performance indicator, Australia lags behind its OECD partners in the expenditure on research in education, teacher education and vocational education research."

Does the abolition of the binary system create more opportunities for research? In the context of our imminent amalgamations with a university (possibly U.T.S.), what real prospects will emerge for increasing the participation rate of staff at ITATE in federally funded research projects? Will TAFE teachers be expected to participate more in industry-linked research?

Finally, is a reflective model of research and development (reflection-practice-theory and action, really valued by industry and government? Since both sectors share a belief in the efficacy of competency-based training, paid for by the users, (Dawkins, 1988) what real prospects are there for such a model to be fostered?

Evidence of a paradigm shift in Australian educational research (Keeves, 1988, Candy, 1987) is now filtering into research in technical teacher education (Jennings, 1986; Killen, 1987) and adult education (Brookover, 1987). At ITATE this shift has become apparent in the growing interest in experiential and self-directive learning (Knights, 1986); in reflexive approaches to research on the the Practicum (Foley and Schaafsma, 1988) and in the development of action research methods that are designed to be emancipatory and empowering for adult learners in "marginal" groups such as migrants, aborigines, unemployed and women (Foley, 1988). At the same time, new initiatives in training technical teachers for TAFE are emphasizing critical thinking skills, self-evaluation processes and group-approaches to problem-solving. These trends are evident in course development at ITATE, however, only limited research evidence is currently available to support these growing beliefs.

Evidence of collaborative and cooperative research between College-based academics and community-based practitioners is increasing. In 1988, this Institute attracted nearly $300,000.00 in external research funding from various Federal and state government departments and agencies. Interestingly enough, these research funds were primarily targeted to marginal groups - the aborigines, the illiterate and the drug users. No research is currently being undertaken at this Institute into persons who are receiving excessive salaries or industries which are doing extremely well due to protectionist legislation (banking, finance and mining).

A growing direct involvement in vocational training for industry has come about through ITATE's Training and Development Service. Although not directly involved in research (yet), the consultancy service provides opportunities for needs analysis, task analysis and models of program development and evaluation - to suit the clients. One possible future outcome could well be funded research to evaluate the effectiveness of the workshops and other training programs that have been provided by ITATE on a fee-for-service basis to many different client groups.

The draft research management plan for Sydney C.A.E. that was developed in 1988 was based on the assumption that the College would continue to exist as one entity. In fact the Sydney C.A.E. Council's decision to support a 'divestment option' has meant that each Institute needs to determine its own research priorities, bearing in mind that it will eventually amalgamate with a university. A critical review of the research priorities for ITATE over the next five years would suggest that it is developing a relevant research program - at least on paper.

If a Centre for Research into Vocational Training and Development was established at ITATE, as suggested, it would focus on two broad areas :

- Curriculum development and evaluation
- Skill Development, Multi-skilling and Cognition
  - (a) By focusing on teaching skills
  - (b) By focusing on vocational training skills

If a Centre for Research in Community Adult Education was established at ITATE, as suggested, it would focus on the following three areas :

- Provisions for Community adult education
- Adult learning and teaching
- Basic education for adults

The traditional rationale for not implementing these priorities (lack of time and resources for conducting research) need to be critically reviewed in the light of a changing climate for industry-based training. In future, institutions such as ITATE may well have to change their dominant teaching role to provide a greater diversity of 'outreach-type' services to their clients. If the dictum of Marx is applicable in a capitalist, pluralist system, then 'from each according to his or her ability to each according to need', may well lead to greater involvement by some staff with trainers in industry and community educators generally in process consultancy, and collaborative research and development activities. However, before such goals are realized, there is a need for industry to take a more positive role in supporting training programs and research and development projects.

The bottom line for all research in vocational education is ultimately how many dollars are available. This paper has suggested some new directions in future research and development; this applies to funding as well - not only from traditional government sources, but also from those 'users' in industry who have a direct stake in the vocational education enterprise.

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CRITICAL THINKING AS A PREREQUISITE FOR REFLECTIVE TEACHING

PAUL HAGER

There is a world-wide interest in encouraging teachers to be more *reflective* in their professional role. The use of the *journal* at ITATE is part of this trend. However while reflective teaching is very much in vogue, there does appear to be significant uncertainty about the nature of *reflection*.

At the University of Wscousin (Zeichner, K. and Liston, D., 1987) the teacher education program is centred on "reflective action" which "entails the active, persistent, and careful consideration of any belief or supposed form of knowledge in light of the grounds that support it and the consequences to which it leads." The program concentrates on developing in student teachers "*orientations* towards open-mindedness, responsibility and whole-heartedness and *skills* of keen observation and reasoned analysis "as a basis for self-directed reflection. For Mezirow (1981) on the other hand, reflection entails a lot more than this. Accepting Habermas' three generic areas in which human interest generates knowledge, he locates reflection in the third of these areas which Habermas characterizes as *emancipatory*. Each of the generic areas has its own interpretive categories, ways of assessing knowledge claims, methods of inquiry and learning modes. According to Mezirow, the emancipatory is "the most distinctively adult domain of learning" and ".... the emphasis is on helping the learner identify real problems involving reified power relationships rooted in institutionalized ideologies which one has internalized in one's psychological history." (1981, pp 6 and 18)

Yet another approach is Schön's (1983) account of professional practical activity as reflective action. According to Schön, problems don't present themselves as given in the classroom, rather teachers need to engage in reflection-in-action to frame and set the problems in response to puzzling, troubling or uncertain situations. This reflection-in-action includes elements of tacit knowledge.

Whatever the differences between these approaches to reflective teaching, it is clear that they all assume a capacity for *significant critical thinking skills*. Accordingly there would seem to be a case for teacher education programs actively seeking to develop these skills. Martin (1983) has argued the need for the inclusion of such skills in teacher education programs. As well, he surveys the literature in this field and reports on positive findings for two research studies where teachers had training in critical thinking. The critical thinking skills recommended by Martin include analysis of error, comparison and contrast, categorization, identifying relationships among disparate elements, understanding hierarchical systems, prediction, and collecting and applying logical evidence to problem solving situations.

Recent developments in informal logic will also be useful here. Dissatisfied with the negative connotations of a "spot-the-fallacy" approach to informal logic skills, informal logicians have developed the technique called dialogue theory in which the emphasis is on creating good arguments, good responses to questions, and good questions to ask people. (Girle et al, 1984). Suitable texts and resource materials are available.

The recent establishment of a register of academics in Australia interested in researching teacher thinking/student thinking is another indication that it is timely for vocational educators to become involved in this field.

Some suggestions for research and development in critical thinking in vocational education :

1. Teacher Education Programs

What are the levels of critical thinking skills in new TAFE teachers? Do we need to do more to develop these skills? How do new graduates of (say) the Bachelor of Education (Technical) compare with typical recent graduates? (As usual, most published research has focussed on school children or recent school leavers).

What links are there, if any, between levels of critical thinking skills and teaching performance?

2. Improvement in Vocational Programs

There is a high wastage rate in TAFE computing courses. A major reason appears to be that students lack the level of conceptual skills required. Could this be remedied by introducing a unit on critical thinking skills? There is scope here for joint research with TAFE. Such research might well attract outside funding.

3. Articulation

There is significant interest in cross-institution credit arrangements being made more efficient and effective. There might be a role for level of critical thinking skills as an indicator of level of attainment.

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FUTURE DIRECTIONS IN RESEARCH ON VOCATIONAL TEACHER EDUCATION

MICHAEL KAYE

ABSTRACT

Within Australia, the apparent transition of vocational teacher education from teachers' colleges to universities presupposes a number of important considerations. In the first place, vocational teacher educators will need to take stock of their present understanding of how academic leadership can be most effectively provided. Currently, there appears to be a healthy increase in scholarly activity on the part of vocational teacher educators. This scholarly effort, however, is not always linked with the teaching processes of vocational teacher educators. Again, it should be noted that some vocational teacher educators continue to repudiate the necessity for any kind of scholarly role. These practitioners see efficient teaching/lecturing to be the sole **raison d'être** for vocational teacher education. Unfortunately, efficient lecturing cannot be the sole determinant of effective academic leadership. Efficient vocational teacher education lecturers are usually those who use as the data for their own scholarly activity/research, their own teaching/facilitating processes.

This paper, therefore, urges current and future vocational teacher educators to focus their scholarly efforts on their legitimate primary concerns - teaching and learning. Evidence that this has already been occurring has been presented in the preceding sessions. At present, there appear to be significant developments in vocational teacher education. For example, attention has been focused on such practices as experiential learning, self-directed learning, learning contracts, negotiated programs and student self-evaluation. Innovative practices of this kind, however, acquire a greater degree of respectability if they are systematically investigated by their users and reported within relevant academic literature.

To conclude, therefore, this paper urges vocational teacher educators to construe teaching/lecturing and scholarship as inextricably related activities. Future directions in research on vocational teacher education will thus emerge when those in the profession increase their efforts to contribute to a field that is increasingly gaining recognition.

CONTEMPORARY RESEARCH IN VOCATIONAL TEACHER EDUCATION: PERSPECTIVES, INFLUENCES AND PRACTICES

There is evidence that interest is growing in researching the field of teacher education (Kaye, 1987a; Nystrom, King & Wimpleberg, 1984). What is abundantly clear is that this interest is noticeably diversified and premised on divergent paradigms. For example, there have been some isolated attempts to link adult education and communication theory with vocational teacher education (Tennant, 1986, 1987; Scott, 1987; Leembruggen, 1987; Kaye, 1987b; Gore, 1987; Kowalski, 1984).

Some of this work has been drawn from disciplinary frameworks attaching to traditional 'subject' areas (e.g., psychology, sociology and philosophy) (Mitchell, 1988; Hansford & Warner, 1988). Other research has been 'issue-based', reflecting an awareness of client concerns and needs (e.g., Desmarchelier, 1988). Finally, there has been research that is policy-driven, constructed on transdisciplinary lines and leading to recommendations for future investigation (e.g., McBeath, 1988).

The simultaneous presence of different orientations suggests that a unifying paradigm for research on vocational teacher education continues to be elusive. One may, of course, question whether unifying paradigms exist in other areas of education and if they do not, whether there is any point in searching for them.

As well, it is important to note that not all vocational teacher educators have, to date, assumed the role of 'researcher'. Many of these non-researchers have instead placed a high premium on teaching excellence (Kaye, 1988). This meant a devotion to the pursuit of quality teaching at the expense of attention to scholarship. Nevertheless, the trend is likely to change as a result of implications arising from the Green and White Papers (Dawkins, 1987, 1988). In this respect, it is worth noting that similar comments have been made about teacher education in America. For example, Ducharme (1985:10) observed that

> 'if teacher education is to survive and eventually prosper on university campuses, it must commit itself to the practice and support of quality scholarship and inquiry; its programs must reflect the impact of the scholarship and inquiry . . . (and that) teacher education will not prosper in higher education until a significant number of faculty produce the kind of scholarship and research that deserves the accolades of reviewers and the implementation of users.'

The lack of directional focus for research on vocational teacher education is also the result of competing ideologies regarding the mission of vocational teacher education institutions like ITATE. Applied theoretical research is singularly de-emphasised by some vocational teacher educators, especially when lecturers have been promoted to positions requiring considerable administrative energy. On this point, Justiz (1984:2) in urging the importance of improving teacher education argued that 'for researchers, the challenge is to provide reliable down-to-earth research for the teaching community; for teacher educators, it is to use this research as a tool for improving teacher education.' Let me hasten to add that teacher education curricula do continue to be innovative, since lecturing staff with senior administrative responsibilities continue to show an awareness of new developments in relevant contemporary research. What does not occur often enough is the generation of locally-based research leading to new directions in teaching and further study.

One must be quick to acknowledge that opportunities for research do occur from time to time. However, what is equally evident is that the onerous nature of administrative and teaching work often precludes any serious contemplation of additional investment in research efforts.

Another apparent trend has been the production of research that has been self-initiated, unfunded, and therefore largely limited in its dissemination to in-house benefits. Within ITATE, for example, there has been considerable effort devoted to the monitoring and evaluation of undergraduate programs. Typically, the results are published internally (Watson, 1985, 1986, 1987) and are used primarily as a basis for course development, review and improvement. As such, this kind of research rarely impacts on audiences outside of the institution in which it was generated, except perhaps for purposes of external course review, accreditation or reaccreditation.

Funded research, has, of course, yielded important findings. However, much of this research is reported in monograph form. How widely this data is circulated is questionable. At ITATE, for example, a number of lecturers have been successful in obtaining 'seed grants' from such sources as the TAFE National Centre for Research and Development. The projects have varied considerably, although nearly all have been conceived in response to well recognised issues of the moment. In some cases, applicants have tended to move away from their previous disciplinary bases to address issues or problems which have greater present-day currency. As Nystrom, King and Wimpleberg (1984:43) noted in connection with teacher education in the USA, the day-to-day work responsibilities of teacher educators have continued to increase to the point where

> '. . . individual faculty members may be discouraged from developing highly specialised academic interests; they may tend to become subject-matter generalists who assume diverse course and program responsibilities that serve to complement the interests represented in the rest of the faculty.'

Perhaps it is advisable at this point to examine the present motivational basis for engaging in research. From the point of view of the policy-maker, research clearly serves the purpose of either legitimising mission-orientations or of reinforcing existing practices through a process of refinement of findings. One of the more common practices involves the use of the replication design in which the operational framework is only slightly modified by the inclusion or exclusion of specific variables. Many evaluative studies tend to conform to this format.

Alternatively, the non policy-driven researcher searches for new directions, topics, issues or concerns which can be cast into investigable terms. The origin of these directions need not be found in present realities but rather in visions of the future.

Within the context of research into vocational teacher education, there persists a number of fundamental controversial constraints. Perhaps the most potent of these is the perennial issue of whether theoretical scholarship should be a prerequisite for the generation of practical, applicable data. Traditionally, vocational teacher educators have prided themselves on searching for truths in relation to practical questions. What is probably equally true, is that the nature of these searches has at times lacked conceptual depth, since the rationales have been typically grounded on policy-informed evidence or on the validity of numerous anecdotal reports.

Other constraints include related notions of relevance to client-needs, the translatability of complex theoretical thinking into intelligibly practical, applicable terms, levels of receptivity by practitioners and bureaucrats, and most significantly, access to funding.

With these considerations in mind, one might well ask what the proper directions are which researchers should take and which the suppliers of incentives should support? The following section represents an attempt to identify a set of working principles for determining the worth of intended research into vocational teacher education.

DETERMINANTS OF RESEARCH INTO VOCATIONAL TEACHER EDUCATION

Undoubtedly, much of the research endeavour into vocational teacher education will depend on the extent to which the White Paper (Dawkins, 1988) is seen as a blueprint for future opportunity. There is an equal degree of probability, as Kaye (1988) has suggested, that scholarship in this area will blossom in years to come. Several factors appear to represent the determinants of future directions in research on vocational teacher education. These factors are briefly commented upon in the ensuing narrative which focuses on practical as well as speculative considerations.

DETERMINANT NO. 1: RELEVANCE

The notion of relevance is problematic and is typically based on the criterion of whether the contemplated research is related to industry or client needs. Underlying this reasoning, is the assumption that industry-related research will help to stimulate the nation's economic recovery. The rhetoric of the White Paper clearly favours this line of thinking.

It is, of course, important to establish valid bases for relevance. A characteristic source of relevance is the **status quo**. In short, issues of the moment become the focus of future research and scholarly activity. Conversely, futuristic projections are seen to be highly speculative, especially when economic and related uncertainties prevail.

Most significantly, the notion of relevance appears to be antithetical to the concept of the pre-eminence of personal commitment, particularly where the commitment is to a problem or issue not deemed to be relevant by those with the capacity to generate funding.

DETERMINANT NO. 2: CREDIBILITY

Credibility may be viewed as an attribute of the scholar. As such, credibility varies with respect to the targetted audience. Defined as the attitude of receivers toward a source (McCroskey, 1978), credibility traditionally embraces such notions as competence, trustworthiness and dynamism. Let it be noted that credibility, in this sense, applies to the investigator rather than to the work itself. To this extent, credibility may be distinguished from the conventional empirical-experimental concerns of validity and reliability.

One of the problems associated with the determinant of credibility is that reputable and imaginative research generated by investigators with unknown or unproven credibility may not find ready acceptance by experienced administrators with the potential to influence policy in industrial and/or vocational organisations. Consequently, such research may not easily acquire currency or applicability amongst practitioners in the field.

In general, high credibility has been traditionally attributed to persons who have had a demonstrable 'understanding' of vocational-educational issues and practices. Often, such understandings have been seen to derive from some history of contact between the researcher and an appropriate vocational-educational or training system. For example, the NSW Department of TAFE features a research division consisting, in the main, of staff with considerable experience in vocational teaching or policy-making. By virtue of their present contact with the research division, such staff members would earn credibility quickly. On the other hand, interested investigators working independently in other contexts such as university departments without strong affiliations with the community of vocational educators, would be likely to be credited with marginal credibility.

Finally, it is worth observing that since much of the current research on vocational issues tends to be highly practical in nature, new theoretical perspectives are difficult to generate in a climate that is predominantly pragmatic. Institutes like ITATE continue to recruit process specialists, some of whom are also qualified in one area of TAFE teaching. However, these new recruits are required to present courses to a diverse group of teachers, most of whom would not possess qualifications in the TAFE subject areas of ITATE lecturers. To this extent, it becomes a nonsense to expect that institute lecturers would possess multiskilled credentials. Thus, the notion of 'having been there' appears unwarranted, especially when teaching competencies are viewed as generic. In short, credibility to undertake research can only rest on qualifications and experience relative to research in education generally.

DETERMINANT NO. 3: ORIGINALITY

There is some doubt as to whether originality is valued. As a determinant, originality appears to have less value than relevance. Unhesitatingly, one could cite instances of original work by vocational teacher educators. Equally, one could register a corresponding lack of interest on the part of employers. The evident reason for any disparity lies in the mismatch of expectations between employers and teacher educators.

Employers see originality in the context of methodologies related to significant current issues. Many of these issues are policy-driven rather than academically derived. In part, the explanation for this has been the derogation of academic effort within an applied field that evidently remains traditionally non-academic. What must be appreciated is that teachers-in-training do not undervalue the contributions of original thinkers to the extent that bureaucrats do. Bureaucrats are impelled by a desire to justify existing policies and practices. Bureaucrats are, moreover, victims of the type of thinking which legitimises their **raison d'être**. On the other hand, neophyte teachers can only approach their training with **tabulae rasae**, unless they have been sensitised to an experience of disappointment. Sensitisations of this kind have, unfortunately, occurred in the past.

As a consequence, recent attempts to introduce new directions in thinking on the part of trainers have been met with concern and scepticism. It has often been the case that new ideas have been blocked without being tried or tested. It is a matter of uncertainty, as to how original ideas can find currency in a climate of reactionary tradition.

Of course, new ideas have survived where contemporary buzzwords have flavoured projects. It has been fashionable, for example, to speak of 'change' when in reality change is the last thing authorities have wanted. 'Change' has effectively become a 'toothless' word since speculation about ways of effecting change has abounded in a context where change has not been sought.

To really effect change, one must genuinely desire something different because the difference will result in a better state of affairs. Furthermore, one must not feel complacent about existing frames of reference. There needs to be a feeling of guardedness about complacency.

It must be said, of course, that originality, in itself, represents an insufficient basis for recognition, acceptance and future endeavour. This is particularly the case where original work cannot be readily shown to have applicability to the field to which it is addressed. The word 'readily' is stressed, because any **potential** impact is often hard to envisage until results or trends emerge.

To this extent, original work needs to be carefully planned so that the rationale appears to have at least face validity. Often face validity, however, implies immediate potential benefits. Researchers may find it hard to envisage these when actual directions rather than results are being sought. Face validity, therefore, provides an uncertain basis for the generation of original research.

DETERMINANT NO. 4: APPLICABILITY/EMPLOYABILITY

There is a trend, generally evident in vocational contexts, that research should have demonstrable pay-offs. The pay-offs are unfortunately, more easily intended than they are realisable. Hypotheses, after all, are tentative until results yield confirmation or, in the case of null hypotheses, rejection at acceptable levels of probability.

What must be emphasised is that applicability is often indicated by implication. Implications do not usually derive directly from the results obtained, but rather are drawn from evidence of methodolgcial or conceptual omissions or weaknesses. The failure of obtained findings to corroborate hypotheses is often accompanied by some analysis of hypothetical or intervening variables unaccounted for in the study in question. On this basis, replication studies are usually developed.

Vocational educators, or course, are characteristically impatient for more tangible results. The need for reliable answers to immediate problems often predominates in considerations of research funding. What must be borne in mind is that few problems worth researching are so straightforward as to generate foolproof findings. More usually, the results are interpreted in terms of probability rather than certainty levels.

Furthermore, an essential value of complex studies carefully based on rigorous theoretical frameworks, is that resultant findings form the basis for continued exploration of the problem area or issue in question. Consequently, it is now appropriate to consider the last of the determinants for future directions in research on vocational teacher education.

DETERMINANT NO. 5: DEVELOPMENTAL POTENTIAL

Although research may be likely to satisfy the criteria of relevance, credibility, originality and applicability, the question of whether the investigation(s) concerned has (have) the potential to lead to further study still remains a critical one. Even major research projects can acquire the reputation of 'one-off' enterprises, especially when the problem under investigation ceases to be seen as a priority for further research. In part, the reason may be that major studies take a long time to complete. During the lengthy period of investigation, other issues, often of emerging political importance, assume ascendancy for those with funding capabilities.

Again, it is possible that research topics or problems which are seen to have relevance at the outset may ultimately yield conclusions of limited value in a changing politico-managerial climate. For example, a large-scale evaluation of NOW (New Opportunities for Women) programs, originally given high funding priority, may in the long run prove to be of academic interest primarily in view of present State Government initiatives to radically curtail the staffing of Women's Co-ordination Units in TAFE.

Of course in some cases, problems and issues for investigation continue to have currency. Assuming that studies of these problems and issues are rigorous in their design and execution, there is good reason to suppose that continuing research effort should eventuate. This would be true especially if researchers and scholars continue to maintain a philosophical commitment which parallels the zeal of policy-making and funding authorities.

In general, therefore, research that is likely to be funded is research which has given due consideration to the various determinants discussed in this section of the paper.

CONCLUSIONS: FUTURE DIRECTIONS

Undoubtedly, pragmatism will play an important role in the identification of future directions in research on vocational teacher education. The philosophy that one will research questions which those with financial power want researched will still prevail. To this extent, much of the research effort in future will continue to be based on reactive assumptions.

Research into vocational teacher education, however, need not conform to this type of conservative motivation. The realisation that vocational teacher educators should adopt a proactive stance in identifying their own problems and issues for investigation will certainly be welcomed by teachers-in-training, since the primary concerns of vocational teacher educators relate to the provision of quality programs in their respective institutes.

Personal observations of current trends in research on vocational teacher education lead me to conclude that there has been a comparative neglect of the study of teaching-learning processes. Whilst there appears to be abundant evidence of research into teacher effectiveness, learning styles and communication processes related to elementary and secondary levels of education, the dominance of teaching-as-method over teaching-as-process in vocational teacher education programs serves to downplay the need for coming to grips with understandings of professional essentials.

On the other hand, it is true that theory and research on adult learning which is largely process oriented, has been given considerable attention, even though the domains of adult education and vocational teacher education have continued to be seen by some, at least at ITATE, as conceptually exclusive. There is good reason to expect that future investigators will attempt to draw conceptual links between adult and vocational territorial boundaries.

It is somewhat remarkable that although the majority of vocational teacher educators at ITATE are regarded as specialists in the theory and practice of vocational teaching, the amount of research into the theory and practice of vocational teaching continues to be disproportionately low. At present, lecturers with this specialisation are typically engaged in developing data-bases for educational media, acquiring expertise in the use of educational media and computer facilities, and exploring sociological issues associated with current policies on equality of opportunity, access, and articulation. According to Wisniewski (1984:7), the gap between theory and practice will never be closed 'until schools of education **apply** scholarship in the planning, implementation and evaluation of their programs'.

I do not wish to devalue the importance of this kind of endeavour. Very often the visions of these investigators are holistic and result in the generation of significant truths. What they do not achieve, I believe, is immediacy of application at the grass-roots level.

I look forward to the time when vocational teacher education courses and programs become based on the scholarly efforts of those teaching them, rather than on the extant literature which continues to feature established and traditional theories and practices. If process-oriented research is ever to get off the ground, those with a stake in the process should be involved. What I am advocating is research involving the cooperative efforts of vocational teacher educators exercising academic leadership and practising vocational teachers.

Again, I do not wish to give the impression that research designs should be necessarily limited to experimental or empirical kinds, even though a great deal of process-oriented research has evolved from these types of frameworks. There is ample scope for researchers to undertake process investigations by means of qualitative or action-based procedures.

Finally, I would reiterate the point that the primary concerns of vocational teacher educators should be teaching and learning. These are essentially matters of concern to educational psychologists, communication theorists, philosophers, and sociologists, among others. Concerted endeavour in this direction is likely to ensure a continuing development of excellence in the broadly-defined field.

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WORKSHOP Q

Theme: **Changing approaches to training.**

Thursday March 16. 3.30 pm.

Adelaide Room 3

Ms. Adrienne Burleigh. Assistant Director (Training Development) Vocational Training Council, New Zealand. *Sticks and Carrots - A managed change of traditional approaches to training.*

STICKS AND CARROTS - A MANAGED CHANGE OF TRADITIONAL APPROACHES TO TRAINING

A paper prepared for a workshop at the TAFE International Conference
on Recent Research and Development in Vocational Education,
March 1989

Adrienne Burleigh, Assistant Director (Training Development)
New Zealand Vocational Training Council

INTRODUCTION

Provider driven "tradition with addition" is a well established, and in places an entrenched practice when it comes to the delivery of training programmes. And I am not referring only to the formal courses offered by the many and various further education institutes. Currently it is also alive and well among the non-formal providers and line managers charged with delivery of on-job training.

So what! There is a lot to recommend the practice in the eyes of many. The full field including emerging and diminishing skills is supposedly covered and there is opportunity to add anything new as it appears. Besides which it is an extremely tried and true method with centuries of confirmed practice to support it.

'So what' might again be the response. The questions that then follow are numerous and must ask how effective the training is within the limit of resources available. They must also address assessed competence rather than assumed competence, competency based training rather than time-served exposure, and the ability of those charged with the management of learning to fully discharge their responsibilities. Further queries arise about current requirements and future needs, the necessity for the continuation of traditional practices and inevitably the costs of present or proposed programmes.

Historically there has been marked compartmentalisation of groups of skills into clearly defined trades and occupations often with the restriction that one person does one job. Multiskilling across the boundaries between occupations has traditionally been given little public acknowledgment while in fact it has been the covert practice of many. In our technologically swiftly changing world there is a need for skills that cross these traditional boundaries and people with the ability to apply core and specialist skills beyond the initially envisaged parameters of their jobs.

But skill development and competence demand training. The 'tradition with addition model' is like an elderly overweight jogger trying to compete in a modern marathon - well intentioned but hopelessly behind regardless of the level of past performance.

How then can a training pattern be developed that allows the learner in any job the opportunity to demonstrate effective efficient and competent patterns of work to the required standards.

A Little History

New Zealand has followed the pattern of many other developed countries with discrete occupational groups of unskilled and semiskilled workers, tradespeople and technicians/technologists.

For those at a level of skills below tradesperson there was little formal learning opportunity. Skill development and training was usually the responsibility of the line manager with all the variations that such an approach brings.

There has been a very traditional approach to apprenticeship with a British base and a colonial application. Initially there was purely master and apprenctice as the instructional unit culminating in a timeserved tradesperson. Later technical education specialists became involved with the aim of combining formal education and on-job training. A successful national examination pass produced a qualified tradesperson.

For the technician/technologist the NZ model has provided formal institutional learning followed by a combination of institutional learning and concurrent relevant on-job experience. The technician, unlike the apprentice has never enjoyed the security of a formalised contract.

Time for Reform

In "Apprenticeship for Tomorrow" (NZ Govt, 1981) quite dramatic shifts were identified as necessary for the next decade.

"* New Zealand industry must adapt more quickly to changes in trading conditions and consumer demand, and adapt new technology at a somewhat faster rate than has previously been the case;

- in the face of intensified competition from other countries our continued competitive advantage will rely substantially on up-grading the skills of an already well-educated labour force;

- there will be a continuing trend for firms to specialise."

This was further summed up in section 19 (Apprenticeship for Tomorrow, 1981)

> "Training systems, including apprenticeship, which do not adapt to these developments will constrain New Zealand's potential for growth, full employment and improved living standards. Conversely training patterns which can adjust to changing circumstances will make a positive contribution to development ... it is imperative that training systems can as much as possible produce a sufficient number of required skills at the right time in the right location."

It was against this background that the reform of apprenticeship got underway. The search was for a training system for the rest of this century that would recognise that the skills for today are not necessarily the ones needed for tomorrow; one that would have an inbuilt assumption that training is not an end in itself but a base for future development; one that would acknowledge that a variety of training approaches must be available to reflect different individual circumstances, and one with guiding principles that highlight options and welcome diversity.

Carrots and Sticks

The government forced the issue. It materially assisted the process through the provision of funding for training needs analysis. In apprenticable trades the funding available was set at 80% of the cost with industry having to provide the balance. Other occupational groups could apply for up to 50% funding. But for apprenticeship there was a time limit for the reform process. Industry had to complete it and meet the requirements of the minister by 31 December 1987. The minister allowed a once only extension of six months for those trades which had failed to meet only one or two of his requirements.

Traditionally Government had provided industry with block course subsidies to help offset the loss of apprenticeship time and the wages paid during the period the apprentice was on a block course. For those trades completing the reform process within the time limit, these subsidies have been substantially enhanced. Trades which did not meet the requirements or chose not to take part in the reform would have all subsidy removed.

The Government's time constraint forced parallel development of on and off-job training documentation and the co-ordination of planning for the resources required. Some significant groups involved were the New Zealand Apprenticeship Committees (comprising employers and unions), off-job providers (polytechnics), the examing authority (Trade Certification Board), those involved in vocational curriculum review (Vocational Prescription Review Unit), and the government departments of Labour and Education. The co-ordination was achieved by the application of the Apprenticeship Reform Process model developed by the VTC.

The Process

A baseline had to be established. This was achieved through job and task analysis of each trade in turn. Further developments led to training manuals for on-job and off-job training, record books for the apprentice and also the identification of mandatory and optional skills, the site of training and pre-entry training and education requirements. The common approach demanded a common methodology and DACUM (Developing a Curriculum) as developed in North America provided that for the job analysis phase. Initially the Canadian model of DACUM was followed, but later there was movement to the American model as developed by the Ohio State University through the National Center for Research in Vocational Education. Since 1984 more than 130 job and task analysis have been completed with approximately 75% of these being in apprenticeable trades.

The process has allowed industry to determine what it requires of its tradespeople before the providers of education and training have become involved. It has allowed the development of integrated on and off-job training that is complementary and sequential and demands the support of industry and the co-operation of all of the providers involved. It has substantially reduced the period of indenture for many apprentices as provision for assessed competence and hence early completion has been introduced and it has allowed regular review and update of skills and knowledge through a modular approach.

Training manuals and record books are now a requirement of apprenticeship orders and there is steadily increasing use of these throughout New Zealand.

Developments

An important development has been the identification of common skills across related trades. This enabled the development of core teaching programmes in the off-job training and the amalgamation and rationalisation of a number of apprenticeships. The Government achieved its aim of reducing the period of indenture and ensuring a move towards a competency based system of training and assessment.

Initially the VTC was fully occupied analysing jobs and tasks for apprenticeable trades alone. This unfortunately led to the misunderstanding that the methodology of DACUM plus was applicable only in the trades area. However as the pressure engendered by the apprenticeship reform process has decreased, the opportunities to use the process have been taken up by many other groups from operative to management level. Technicians have also availed themselves of this opportunity. Some examples in this area would be in information technology, health engineering, dental technology and power systems control. In each of these cases the training programme resulting has national application but each exercise was done for different reason. Some of these reasons were:-

* the determination of the entry levels of education and experience, and the extral skills required for newly aligned jobs following a total re-organisation of structure throughout the country

* the development of a national training programme emanating from one polytechnic

* the development of a national training programme emanating from all polytechnics meeting accreditation standards and involving substantial input of employer provided training time

* the development of accurate job descriptions (which lead to salary level determination) and the provision of inhouse specialist training based on a competency model

Service and managerial positions have also been analysed with the consequent development of a variety of programmes each specifically targeted at "need to know, need to do" tasks rather than the nice-to-know areas.

Conclusion

In adopting nationally a systematic approach to this task and using a common methodology industry has been able to supply providers of vocational education and training the information needed to allow development of mutually acceptable training programmes. Over training and the inclusion of traditional but no longer used skills has been avoided and in many cases training programmes have become more cost and time effective. Review of the programmes can be undertaken on a regular basis and because of the modularity addition and subtraction of tasks to ensure currency is relatively simple.

The model, developed to meet government requirements of national apprenticeship training is attracting support and demand from all sectors of the workforce and the validated products are very diverse in their application.